

EXHIBIT B

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

IN RE JPMORGAN CHASE & CO.
SECURITIES LITIGATION

Master File No. 1:12-cv-03852-GBD

REPORT ON MARKET EFFICIENCY
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SCOPE OF PROJECT AND REPORT

1. I was asked by Bernstein Litowitz Berger & Grossmann LLP, Grant & Eisenhofer P.A., and Kessler Topaz Meltzer & Check, LLP, Co-Lead Counsel for Lead Plaintiffs, to determine whether the common stock of JPMorgan Chase & Co. (“JPMorgan” or the “Company”) traded in an efficient market during the period from 13 February 2012 through 21 May 2012 (the “Class Period”).¹ In addition, I have been asked to opine on whether damages in this matter are subject to a common methodology under Section 10(b) of Exchange Act of 1934 and SEC Rule 10b-5 adopted thereunder (collectively, “Section 10(b)”).
2. Toward this end, I analyzed the market for JPMorgan common stock, the price behavior of the stock, and the factors that are generally accepted to be indicative of market efficiency. I examined Company press releases, conference call transcripts, equity analyst reports, news articles, U.S. Securities & Exchange Commission (“SEC”) filings, security prices, trading volume, the performance of the overall stock market, and the performance of JPMorgan’s peer group, as well as other pertinent data and documents. I also read Lead Plaintiffs’ Second Amended Consolidated Class Action Complaint (“Complaint”) dated 15 April 2013 and the Proposed Third Amended Consolidated Class Action Complaint, dated 16 January 2015 (“Proposed Complaint”), and considered the allegations therein. Exhibit-1 lists the documents I reviewed and relied upon in preparing this report and arriving at the opinions expressed herein.
3. This report presents my methodology, findings, and conclusions.
4. I understand that discovery is ongoing in this case. I reserve the right to amend, refine, or modify my opinion and report, including in the event any new additional information or analysis becomes available.

¹ I also analyzed the factors that are generally accepted to be indicative of market efficiency during the period from 13 April 2012 through 21 May 2012 (the “Alternative Class Period”). Except as otherwise stated herein, my conclusions as to the Class Period apply equally to the Alternative Class Period.

CREDENTIALS

5. I am an Associate Professor of Finance at Babson College, and the founder and president of Crowninshield Financial Research, Inc., a financial economics consulting firm.
6. I hold a Ph.D. in Economics from Yale University, a Master of Philosophy degree in Economics from Yale University, a Master of Arts in Economics from Yale University, and a Bachelor of Arts degree in Economics from Pomona College. I also hold the Chartered Financial Analyst (“CFA”) designation, granted by the CFA Institute.
7. At Babson College I have taught undergraduate and MBA level courses in Valuation, Capital Markets, Investments, Equity Analysis, Fixed Income Analysis, Financial Management, Risk Management, Quantitative Methods, and Security Valuation. I have also taught executive courses on investments and corporate financial management for numerous corporations. Other courses I have taught are listed in my curriculum vitae, which is attached as Exhibit-2.
8. At Babson College, I have held the Chair in Applied Investments and served as the Director of the Stephen D. Cutler Investment Management Center, a research and education center dedicated to the study and teaching of investments and capital markets.
9. Prior to my joining the faculty at Babson College, I taught finance at Boston University. Previously, I was an Economist at the Federal Reserve Bank of Atlanta where my primary responsibilities were to monitor financial markets, analyze proposed regulation, and advise the Bank President in preparation for his participation in meetings of the Federal Open Market Committee – the government body responsible for monetary policy in the United States.
10. I have published extensively in the field of finance. My finance articles have appeared in the *Atlanta Federal Reserve Bank Economic Review*, *Derivatives Quarterly*, *Derivatives Weekly*, *The Engineering Economist*, *The Journal of Risk*, *The American Bankruptcy Institute Journal*, *The Journal of Financial Planning*, *The Journal of Forensic Economics*, *Managerial Finance*, *Risk Management*, and *Primus*. I am the author of *Finance and Accounting for Project Management*, published by the American Management Association. I wrote two chapters in the book *The Portable MBA in Finance and Accounting* – one on corporate financial planning and the other on risk management. I have presented research at the annual conventions of the American Finance Association, the Academy of Financial

Services, the Multinational Finance Society, the Financial Management Association, the Taxpayers Against Fraud Education Fund Conference, and the International Conference on Applied Business Research. Co-authored papers of mine have been presented at the Eastern Finance Association meetings and the Midwestern Finance Association meetings. A list of all the publications I authored in the previous ten years can be found in my curriculum vitae, which is attached as Exhibit-2.

11. I have been selected to review papers for numerous finance journals and conferences, and I have reviewed finance textbook manuscripts for Prentice-Hall, Elsevier, Blackwell, and Southwestern Publishing. I have been quoted on matters relating to finance and investments in *The Wall Street Journal*, *The Washington Post*, *The New York Times*, *The Financial Times*, *The Boston Globe*, and *Bloomberg News*, and my research relating to financial analysis and valuation has been discussed in *The Wall Street Journal*, *Bond Buyer*, and *Grant's Municipal Bond Observer*.
12. I am a member of the American Finance Association, the Financial Management Association, the North American Case Research Association, the National Association of Forensic Economics, the CFA Institute, and the Boston Security Analysts Society, where I have served as a member of the education committee and ethics subcommittee. I served on the Fixed Income Specialization Examination Committee of the CFA Institute.
13. The CFA designation is the premier credential for financial analysts worldwide. In order to receive this credential, applicants must pass a series of three exams covering such topics as economics, equity analysis, financial valuation, business analysis, quantitative methods, investment analysis, portfolio management, risk management, financial accounting, and ethical and professional standards. For over ten years I taught in the Boston University CFA Review Program and the Boston Security Analysts Society CFA Review Program – two of the leading review programs that prepared candidates for the CFA exams. In both of these programs I taught candidates at the most advanced level.
14. In addition to my teaching, research, CFA, and academic community responsibilities, I practice extensively as a financial consultant. Past and present clients include the United States Securities and Exchange Commission, the Internal Revenue Service, the Attorney General of the State of Illinois, and the National Association of Securities Dealers. As a financial consultant, I have conducted analyses and presented opinions related to markets,

valuation, and damages in over 50 cases. Exhibit-3 lists my prior testimony appearances over the past four years.

15. I am the president and founder of the consulting firm Crowninshield Financial Research, which receives compensation for the work performed by me and the analysts who assist me on this case. My firm is being compensated at a rate of \$715 per hour for my work, and my compensation is neither contingent on my findings nor on the outcome of this matter.

CONCLUSIONS

16. JPMorgan common stock traded in an efficient market over the course of the Class Period. JPMorgan common stock satisfied the factors set forth in *Cammer v. Bloom*, 711 F. Supp. 1264, 1273 (D.N.J. 1989) and *Krogman v. Sterritt*, 202 F.R.D. 467 (N.D. Tex. 2001), which, consistent with financial economic principles and empirical research, indicate market efficiency.
17. JPMorgan common stock exhibited statistically significant price reactions in response to new information on three disclosure event dates. Additional statistical tests examining the behavior of the stock price on earnings and guidance announcement dates further indicate that JPMorgan common stock responded to new Company-specific information. This empirical analysis demonstrates that there was a cause and effect relationship between the release of new Company-specific information and movements in the JPMorgan common stock price during the Class Period, which not only indicates market efficiency, but demonstrates the essence of market efficiency.
18. Based on the foregoing, I conclude that JPMorgan common stock traded in an efficient market over the course of the Class Period. I further conclude that damages in this matter are subject to a common methodology that can be calculated on a class-wide basis.

FACTUAL BACKGROUND

About the Company

19. Prior to and throughout the Class Period, JPMorgan was a global financial services firm and one of the largest banks in the United States.² The Company had five business segments: 1) Consumer & Community Banking; 2) Corporate & Investment Bank; 3) Commercial Banking; 4) Asset Management; and 5) Corporate/Private Equity.³
20. The Company's Corporate/Private Equity segment comprises Private Equity, Treasury, and the Chief Investment Office ("CIO").⁴ According to the Company, the Treasury and CIO are responsible for managing the Company's capital, liquidity, and structural risks.⁵
21. As of 31 December 2011, the Company had \$2.3 trillion in assets and \$183.6 billion in stockholders' equity.⁶ The Corporate/Private Equity segment had \$693.2 billion in assets, for the same period.⁷
22. For the fiscal years 2011 and 2012, the Corporate/Private Equity segment reported net revenues of \$4.1 billion and negative \$1.2 billion, respectively.⁸
23. Throughout the Class Period, JPMorgan common stock was listed and traded on the New York Stock Exchange ("NYSE") under the symbol JPM.
24. At the close of trading on 10 February 2012, the last trading day prior to the start of the Class Period, JPMorgan's common stock price was \$37.61 per share, according to share price data obtained from the Center for Research in Security Prices ("CRSP"). On 21 May 2012, the final day of the Class Period, the stock price had fallen to \$32.51 per share, representing a decline of 13.6% from the start of the Class Period.⁹
25. As of the close of trading on 10 February 2012, the last trading day prior to the start of the Class Period, JPMorgan's market capitalization (the aggregate value of all outstanding

² JPMorgan Chase & Co., Form 10-K for the Fiscal Year Ended 31 December 2012, filed 28 February 2013, p. 1.

³ *Id.*

⁴ JPMorgan Chase & Co., Form 10-K for the Fiscal Year Ended 31 December 2011, filed 29 February 2012, p. 107.

⁵ *Id.*

⁶ *Id.*, p. 1.

⁷ *Id.*, p. 303.

⁸ JPMorgan Chase & Co., Form 10-K for the Fiscal Year Ended 31 December 2012, filed 28 February 2013, p. 79.

⁹ On 12 April 2012, the last trading day prior to the Alternative Class Period, JPMorgan's common stock price was \$44.84 per share. On 21 May 2012, the final day of the Alternative Class Period, the stock price had fallen to \$32.51 per share, representing a decline of 27.5% from the start of the Alternative Class Period.

common shares) stood at \$143.6 billion. By the close of trading on 21 May 2012, the final day of the Class Period, the Company's market capitalization had fallen to \$123.8 billion. The decline in market capitalization from the day prior to the start of the Class Period to the final day of the Class Period was \$19.8 billion, representing a loss of 13.8% of the Company's equity value.¹⁰

26. Throughout the Class Period, JPMorgan was one of the 30 constituents of the Dow Jones Industrial Average ("DJIA").¹¹ The DJIA comprises 30 of the largest and most well-known companies in the U.S. The DJIA was created "to provide a clear, straightforward view of the stock market and, by extension, the U.S. economy."¹²

EFFICIENT MARKET DEFINED

27. The definition of market efficiency set forth by Judge Alfred J. Lechner, Jr. in the 1989 *Cammer v. Bloom* decision is often cited as a legal authority on the meaning of market efficiency and is consistent with the definition generally accepted by the academic finance community:

"As relevant here, courts have permitted a rebuttable presumption of reliance in the case of securities traded in 'efficient markets' (*i.e.*, markets which are so active and followed that material information disclosed by a company is expected to be reflected in the stock price)."
Cammer v. Bloom Opinion, 711 F. Supp. 1264, 1273 (D.N.J. 1989).

28. Judge Lechner also cited the definitions offered by commentators Alan R. Bromberg and Lewis D. Lowenfels, and by finance professor Eugene Fama:

¹⁰ On 12 April 2012, the day prior to the start of the Alternative Class Period, JPMorgan's market capitalization stood at \$171.2 billion. By the close of trading on 21 May 2012, the final day of the Alternative Class Period, the Company's market capitalization had fallen to \$123.8 billion. The decline in market capitalization from the day prior to the start of the Alternative Class Period to the final day of the Alternative Class Period was \$47.4 billion, representing a loss of 27.7% of the Company's equity value.

¹¹ "Dow Jones Industrial Average: Historical Components," S&P Dow Jones Indices, McGraw Hill Financial, September 2013.

¹² "Dow Jones Industrial Average: Overview," obtained from the S&P Dow Jones Indices website, <https://www.djaverages.com/?go=industrial-overview>, accessed on 25 September 2014.

“An efficient market is one which rapidly reflects new information in price.”

Alan Bromberg & Lewis Lowenfels, *Securities Fraud and Commodities*, §8.6 (Aug. 1988); *see also Cammer*, 711 F. Supp. at 1276.

“A market in which prices always ‘fully reflect’ available information is called ‘efficient.’”

“Efficient Capital Markets: A Review of Theory and Empirical Work,” by Eugene Fama, *Journal of Finance*, 1970, cited in *Cammer*, 711 F. Supp. at p. 1280.

29. The Supreme Court in the *Basic v. Levinson* decision focused on the same important characteristic at the heart of these definitions of market efficiency:

“The fraud on the market theory is based on the hypothesis that, in an open and developed securities market, the price of a company’s stock is determined by the available material information regarding the company and its business”

Basic v. Levinson, 485 U.S. 224, 243, 108 S. Ct. 978, 988-89, 99 L. Ed. 2d 194 (1988); *see also Cammer*, 711 F. Supp. at 1276.

30. The recent *Amgen* decision defined market efficiency similarly.

“The fraud-on-the market premise is that the price of a security traded in an efficient market will reflect all publicly available information about a company”

Amgen Inc. v. Conn. Ret. Plans & Trust Funds, U.S., 133 S. Ct. 1184, 1190 (2013), 185 L. Ed. 2d 308 (2013).

31. In its recent *Halliburton II* decision, the Supreme Court addressed the cause and effect relationship at the center of market efficiency thusly:

“Even the foremost critics of the efficient-capital markets hypothesis acknowledge that public information generally affects stock prices. . . . Debates about the precise *degree* to which stock prices accurately reflect public information are thus largely beside the point. ‘That the . . . price [of a stock] may be inaccurate does not detract from the fact that false statements affect it, and cause loss,’ which is ‘all that *Basic* requires.’”

Halliburton Co. v. Erica P. John Fund, Inc., 134 S. Ct. 2398, 2410, 189 L. Ed. 339 (2014) (“*Halliburton II*”) (emphasis in original).

32. An efficient market, as defined by *Cammer*, *Basic*, *Amgen*, Bromberg and Lowenfels, and Fama, is a market in which available information is rapidly incorporated into the price of a security such that the trading price reflects all available information. As these cases and

Halliburton II recognized, market efficiency is relevant to a securities case as it addresses the question of whether false information (*e.g.*, in the form of an alleged misrepresentation or omission) would likely have impacted the prices at which investors bought and sold, and which were relied upon.

The Cammer Factors

33. The *Cammer* opinion lays out five factors that would suggest the market for a security is efficient. As described below, economic rationales support each factor as an indicator of market efficiency. The five factors are: 1) trading volume, 2) coverage by securities analysts, 3) number of market makers, 4) eligibility for S-3 registration, and 5) empirical evidence that the security price reacts to new, company-specific information.
34. Empirical research has confirmed that volume, number of market makers, and analyst coverage are indicative of market efficiency:

“Consistent with the efficiency indicators used recently by the courts, the inefficient firms have lower mean trading volume, fewer market makers, lower analyst following, and lower institutional ownership (number and percentage) than efficient firms.”

“**The Fraud-on-the-Market Theory and the Indicators of Common Stock Efficiency,**” by Brad M. Barber, Paul A. Griffin, and Baruch Lev, *Journal of Corporation Law*, 1994, p. 302.

35. Barber, *et al.*, also found that high institutional ownership was indicative of market efficiency.
36. With respect to the empirical factor, Barber, *et al.* used empirical tests as the standard for market efficiency by which to judge the significance of the other variables. Consequently, they acknowledge the importance of the empirical factor.
37. Consistent with financial economic theory and empirical research, the language used by the *Cammer* Court describes the factors not as five **necessary** factors, but rather as indicative of the degree to which the market for a security is expected to be efficient:

“There are several different characteristics pertaining to the markets for individual stocks which are probative of the degree to which the purchase price of a stock should reflect material company disclosures.”
Cammer, 711 F. Supp. at 1283.

38. The *Cammer* opinion describes the nature of the five factors as follows:

“There are several types of facts which, if alleged, might give rise to an inference that Coated Sales traded in an efficient market. It is useful to set forth an explanation of how the existence of such facts would cause the understanding that disclosed company information (or misinformation) would be reflected in the company’s stock price, the underpinning of the fraud on the market theory. *Peil, supra*, 806 F.2d at 1160.”
Id. at 1285-86 (footnote omitted).

“First, plaintiffs could have alleged there existed an average weekly trading volume during the class period in excess of a certain number of shares.”
Id. at 1286.

“Second, it would be persuasive to allege a significant number of securities analysts followed and reported on a company’s stock during the class period.”
Id.

“Third, it could be alleged the stock had numerous market makers.”
Id.

“Fourth, as discussed it would be helpful to allege the Company was entitled to file an S-3 Registration in connection with public offerings...”
Id. at 1287.

“Finally, it would be helpful to a plaintiff seeking to allege an efficient market to allege empirical facts showing a cause and effect relationship between unexpected corporate events or financial releases and an immediate response in the stock price.”
Id.

“As previously noted, one of the most convincing ways to demonstrate efficiency would be to illustrate over time, a cause and effect relationship between company disclosures and resulting movements in stock price.”
Id. at 1291.

The Krogman Factors

39. In addition to the five *Cammer* factors that indicate market efficiency, the district court in *Krogman v. Sterritt*, 202 F.R.D. 467 (N.D.Tex. 2001), and the Fifth Circuit Court of Appeals in *Unger v. Amedisys*, 401 F.3d 316 (5th Cir. 2005), concluded that three additional factors were also indicative of market efficiency.
40. These additional factors, the *Krogman* factors, are: 1) the company's market capitalization, 2) the stock's float, and 3) the typical bid-ask spread.
41. Market capitalization is the total value of all outstanding shares. It equals the number of shares outstanding times the price per share. Reasonably, the larger the market capitalization, the more prominent and well known the company will be. Larger companies tend to attract more analyst and news media coverage, and gain the attention of greater numbers of investors, including very large institutional investors. All of these characteristics, which accompany a large market capitalization, promote market efficiency.
42. The stock's float is the number of shares outstanding less shares held by insiders and affiliated corporate entities. It is generally the number of shares available for trading by outside investors in the open market. Float is highly correlated with market capitalization, but it focuses on the shares available for trading rather than all outstanding shares. Stocks with large levels of float tend to trade more actively, attract more analyst and news media coverage, and garner the attention of greater numbers of investors, including large institutional investors. All of these characteristics, which accompany a high float level, promote market efficiency.
43. The bid-ask spread is the difference between the price at which market makers are offering to buy a security and the price at which they are offering the security for sale. If a security is actively traded and information about the security is readily available, the bid-ask spread will tend to be narrow. Moreover, a narrow bid-ask spread makes trading in the security less costly for investors, and thereby tends to attract greater interest, greater coverage, and greater volume, which in turn are factors that are generally considered to promote market efficiency.

EFFICIENCY OF THE MARKET FOR JPMORGAN COMMON STOCK

44. To assess whether the market for JPMorgan common stock was efficient during the Class Period, I analyzed the market for, and behavior of, JPMorgan common stock, focusing on the factors that are generally accepted to be indicative of market efficiency for a publicly traded security.

Trading Volume

45. Throughout the Class Period, JPMorgan common stock traded regularly and actively. On average, 39.9 million shares changed hands daily.¹³ On one day, 11 May 2012, over 217 million shares traded. JPMorgan's common stock trading data is presented in Exhibit-4.
46. In addition to average daily trading volume, another volume metric to consider in determining market efficiency is the percentage of outstanding shares that turn over each week. During the Class Period, the average weekly trading volume of JPMorgan common stock was 199.4 million shares, or 5.2% of shares outstanding.^{14, 15} This level of trading activity is above levels accepted by courts as being indicative of market efficiency for common stocks.¹⁶ In the case of the common stock of Coated Sales, Inc., the *Cammer* court cited the conclusion of Alan R. Bromberg and Lewis D. Lowenfels that "weekly trading of 2% or more of the outstanding shares would justify a strong presumption that the market for the security is an efficient one; 1% would justify a substantial presumption."¹⁷ Trading volume for JPMorgan common stock during the Class Period was well above the threshold for a strong presumption of market efficiency.
47. Both in terms of average daily trading volume and also on the basis of the percentage of outstanding shares traded weekly, the market for JPMorgan common stock was active. Consistent with the *Cammer* opinion, economic theory and empirical research, the active trading volume in JPMorgan common stock is strong evidence of the efficiency of the market for JPMorgan common stock over the course of the Class Period.

¹³ Data obtained from CRSP. For the Alternative Class Period, an average of 49.3 million shares traded daily.

¹⁴ Estimated by dividing the average daily volume by the average number of shares outstanding, times 5 (the number of trading days in a typical week).

¹⁵ During the Alternative Class Period, the average weekly trading volume was 246.5 million shares for the Alternative Class Period or 6.5% of shares outstanding during that time.

¹⁶ *Cammer*, 711 F. Supp. at 1286.

¹⁷ *Id.*, at 1293.

Analyst Coverage and Other Avenues of Information Dissemination

Analyst Coverage

48. Securities analysts disseminate and interpret information about the companies they cover. They conduct research and provide valuation opinions, helping market participants acquire relevant information and understand the implications of that information for valuation and investment decisions. Consequently, securities analysts facilitate the flow of information and the digestion of information within the marketplace. These functions promote market efficiency.
49. JPMorgan was the subject of active analyst coverage during the Class Period. From the Thomson Research database, I obtained analyst reports on JPMorgan published during the Class Period by 21 different firms: Barclay's Capital; Buckingham Research Group; Credit Suisse; Deutsche Bank; Evercore Partners; Guggenheim Securities; JMP Securities; Macquarie Research; MedioBanca; Miller Tabak & Co.; Morgan Stanley; Oppenheimer and Co.; RBC Capital Markets; Rochdale Securities; Sandler O'Neill & Partners; SSIF Tradeville; Standard & Poor's; Sterne, Agee & Leach; Trefis; UBS Investment Research; and Wells Fargo.
50. Additionally, from Counsel I received analyst reports on JPMorgan published during the Class Period by 7 different firms: Bank of America Merrill Lynch; Bernstein; CLSA; Goldman Sachs; ISI Group; Keefe, Bruyette & Woods; and Stifel Nicolaus.
51. Transcripts of JPMorgan's conference calls conducted during the Class Period reveal that at least 5 additional analysts followed JPMorgan: BlackRock; Citigroup; FBR; NAB Research; and Nomura.
52. Consequently, at least 33 different firms covered JPMorgan during the Class Period.¹⁸
53. Consistent with the *Cammer* opinion and financial economic principles, the coverage of JPMorgan by professional securities analysts is evidence of the efficiency of the market for JPMorgan common stock during the Class Period.

¹⁸ The same 33 firms covered JPMorgan during the Alternative Class Period.

Institutional Ownership and Buy-Side Analysis

54. Vickers Stock Research Corporation (“Vickers”) provides data on institutional ownership of JPMorgan common stock. The data is compiled from the Form 13-F filings that major investment institutions are required to submit to the SEC. Major institutions are defined as firms or individuals that exercise investment discretion over the assets of others in excess of \$100 million. Large investment firms generally employ financial analysts who conduct their own research on the stocks they buy. According to the Vickers data, at least 1,397 major institutions owned JPMorgan common stock during the Class Period.¹⁹
55. JPMorgan was not an obscure company, escaping the notice of analysts and investors. Rather, the Company was large, well known, widely covered, and widely held. These facts strongly support a finding that the market for JPMorgan common stock was an efficient market during the Class Period.

Market Makers and Listing on the New York Stock Exchange

56. The number of market makers is one of the factors the *Cammer* court determined indicates market efficiency. Market makers are financial intermediaries who trade in a particular security, standing ready to buy and sell with individual investors, institutions, and other market makers. A large number of market makers implies that many market participants are trading that particular stock, which generally provides a high degree of liquidity and a narrower bid-ask spread. With a large number of market makers it is generally easy for investors to execute trades in a timely fashion and with reasonable transaction costs.
57. The subject company in the *Cammer* case, Coated Sales, Inc., was listed on the NASDAQ, an over-the-counter market consisting of multiple competing market makers, using electronic systems to make quotes and effect trades.
58. The *Cammer* court’s understanding that the market-making infrastructure of a stock market is indicative of its efficiency, or lack thereof, makes the fact that JPMorgan common stock trades on the venerable New York Stock Exchange highly relevant. The NYSE is one of

¹⁹ According to filings that reported holdings, there were 1,397 institutions that held shares of JPMorgan common stock as of 31 March 2012 and 30 June 2012. There may have been additional institutions that held JPMorgan stock during the Class Period, though not on the quarterly reporting dates. Similarly, at least 1,397 institutions held JPMorgan common stock during the Class Period.

the most renowned, most liquid, and most efficient forums for trading stocks in the world. Stocks on the NYSE are traded under the supervision of a lead market maker or “Designated Market Maker” (“DMM”), formerly known as a specialist.²⁰ DMMs are responsible for maintaining a fair and orderly market for each security in which they are registered.²¹

59. In fact, citing Bromberg and Lowenfels, the *Cammer* Court explicitly acknowledged the importance of an NYSE listing and the implications of such a listing for market efficiency.

“We think that, at a minimum, there should be a presumption – probably conditional for class determination – that certain markets are developed and efficient for virtually all the securities traded there: the New York and American Stock Exchanges, the Chicago Board Options Exchange and the NASDAQ National Market System.”

Cammer, 711 F. Supp. at 1292 (quoting Bromberg & Lowenfels, *Securities Fraud and Commodities Fraud*, §8.6 (1988)).

60. At the time of the *Cammer* opinion the NYSE and NASDAQ were distinctly separate exchanges. NASDAQ market makers did not make markets for NYSE-listed stocks such as JPMorgan. However, since that time, the stock markets have evolved dramatically, and beginning in April 2005, NASDAQ enabled trading in most NYSE-listed stocks through its market maker structure.²² This NASDAQ market making activity would be in addition to the principal market for listed stocks on the NYSE.
61. From February 2012 through May 2012, according to Bloomberg, there were at least 173 market makers for JPMorgan common stock.²³ These included: Barclays Capital, Citadel Securities, Knight Capital, Morgan Stanley, Goldman Sachs, and Merrill Lynch.
62. The fact that it traded on the NYSE is strong evidence that JPMorgan common stock traded in an efficient market throughout the Class Period. JPMorgan’s listing on the NYSE gave its stock access to a highly developed network of brokers with its market overseen by the NYSE DMM. In addition there was extensive market making activity in JPMorgan

²⁰ “Fact Sheet; Designated Market Makers,” NYSE Euronext, 2012.

²¹ “Organization and Functioning of Securities Markets,” by Frank Reilly and Keith Brown, in *Equity and Fixed Income CFA Program Curriculum*, vol. 5, Pearson Custom Publishing, 2008.

²² “Nasdaq To Enable Customers To Trade NYSE Stocks,” *Reuters*, 28 March 2005.

²³ At least a 155 firms made a market in JPMorgan stock during the Alternative Class Period.

common stock on the NASDAQ exchange. These facts are compelling evidence of the efficiency of the market for JPMorgan stock.

S-3 Registration Eligibility

63. A company is eligible for S-3 registration when, among other things, it has filed Exchange Act reports for a specified length of time and has outstanding float above a certain sizable value. At the time of the *Cammer* opinion, the conditions for S-3 registration were that a company had filed financial reports with the SEC for 36 months, and had outstanding float over \$150 million held by non-affiliates, or \$100 million of such float coupled with annual trading volume exceeding 3 million shares. Since 1992 the rules have required 12 months of filings and \$75 million of float.
64. The *Cammer* court noted that S-3 registration eligibility is indicative of market efficiency because the filing requirement ensured that financial data were available to market participants, and the size and volume requirements indicated that many market participants would have examined the information.

“Proposed Form S-3 recognizes the applicability of the efficient market theory to the registration statement framework with respect to those registrants which usually provide high quality corporate reports, including Exchange Act reports, and whose corporate information is broadly disseminated, because such companies are widely followed by professional analysts and investors in the market place. Because of the foregoing observations made by the SEC, the existence of Form S-3 status is an important factor weighing in favor of a finding that a market is efficient.”

Cammer, 711 F. Supp. at 1284-85.

“The ‘public float’ aspect of the Form S-3 requirements ensures that enough investors have in fact read the previously filed document.”

Id. at 1285.

“Again, it is the number of shares traded and value of shares outstanding that involve the facts which imply efficiency.”

Id. at 1287.

65. JPMorgan satisfied the conditions for S-3 registration eligibility throughout the entire Proposed Class Period. JPMorgan was not only eligible for S-3 registration, but the Company did file an S-3 Registration statement on 14 November 2011, just prior to the Class Period.²⁴
66. Consistent with the *Cammer* opinion, JPMorgan's eligibility to file an S-3 registration is evidence of the efficiency of the market for JPMorgan common stock during the Class Period.

Krogman Factors

67. In addition to evaluating market efficiency using the *Cammer* factors, I also examined JPMorgan common stock and its market with respect to the three additional *Krogman* factors.

Market Capitalization

68. During the Class Period, JPMorgan's market capitalization averaged \$158.7 billion,²⁵ putting JPMorgan in the 1st decile of U.S. companies – meaning that JPMorgan was larger than at least 90% of all other publicly-traded companies in the U.S.²⁶
69. Consistent with the *Krogman* court's opinion, JPMorgan's large market capitalization throughout the Class Period is further evidence of the efficiency of the market for JPMorgan stock.

²⁴ JPMorgan Chase & Co., Form S-3, filed 14 November 2011.

²⁵ Over the course of the Alternative Class Period, JPMorgan's market capitalization averaged \$155.2 billion.

²⁶ Using averaged month-end data from CRSP for February 2012 through April 2012, I grouped public companies into deciles, so that the 1st decile contains the largest 10% of all public companies listed on the NYSE, American Stock Exchange, and NASDAQ, while the 10th decile contains the smallest 10%.

Float

70. JPMorgan common stock float averaged \$157.2 billion during the Class Period.²⁷ While this amount excludes shares held by insiders and affiliated corporate entities, it is still larger than the entire market capitalization of 90% of all other publicly-traded companies in the U.S.²⁸ The magnitude of JPMorgan's float is indicative of market efficiency.
71. Float can also be analyzed as a percentage of total shares outstanding, as well as in absolute share and value terms. On average during the Class Period, there were 3.7 billion shares in the float and 3.8 billion shares outstanding, resulting in an average float of 99.0% of shares outstanding.²⁹ The portion of shares that traded freely in the marketplace was larger than the respective floats and market capitalizations for the majority of publicly traded companies in the U.S.
72. JPMorgan's substantial float is indicative of the efficiency of the market for its stock during the Class Period.

Bid-Ask Spread

73. I obtained data on daily closing bid and ask quotes for JPMorgan common stock during the Class Period from CRSP.
74. I measured the percentage bid-ask spread as the difference between the bid and ask quotes, divided by the average of the bid and ask quotes, which is the standard way of measuring percentage bid-ask spreads in the finance literature. Exhibit-4 presents JPMorgan's bid-ask spread data.
75. The average bid-ask spread for JPMorgan stock over the course of the Class Period was 0.02%.³⁰

²⁷ During the Alternative Class Period, JPMorgan's common stock float averaged 153.8 billion.

²⁸ Using averaged month-end data from CRSP for February 2012 through April 2012. For a discussion of the generally accepted definitions of shares outstanding and float, see "Float Adjustment Methodology," *S&P Dow Jones Indices*, July 2012.

²⁹ Average float during the Alternative Class Period was also 99.0% of shares outstanding.

³⁰ JPMorgan's average bid average bid-ask spread over the course of the Alternative Class Period was also 0.02%.

76. By comparison, the average month-end bid-ask spread over the course of the Class Period for all stocks in the CRSP database was 0.7%.³¹ JPMorgan's bid-ask spreads were therefore narrower than the mean level among all other CRSP stocks – which comprises stocks traded on the NYSE, Amex, NASDAQ, and NYSE Arca.
77. In dollar terms, JPMorgan's bid-ask spread during the Class Period averaged \$0.01 per share.³² For all stocks in the CRSP database, the average bid-ask spread during the Class Period was \$0.07.³³
78. The average bid-ask spread in the market for JPMorgan stock over the course of the Class Period was well below the typical bid-ask spreads exhibited by other publicly-traded stocks in the U.S. JPMorgan's narrow bid-ask spread supports a conclusion of market efficiency.

EMPIRICAL EVIDENCE OF JPMORGAN COMMON STOCK MARKET
EFFICIENCY

79. Of the five *Cammer* factors, the empirical factor was cited by the *Cammer* court as “one of the most convincing ways to demonstrate efficiency”:

“As previously noted, one of the most convincing ways to demonstrate efficiency would be to illustrate over time, a cause and effect relationship between company disclosures and resulting movements in stock price.”
Cammer, 711 F. Supp. at 1291.

80. The special importance the *Cammer* Court placed on the empirical factor is justified by economic principles, as the empirical factor focuses on the essence of market efficiency whereas the other four factors are indicators that generally signal market efficiency.
81. I conducted two sets of empirical tests of the efficiency of the market for JPMorgan common stock during the Class Period.
82. The first set of empirical tests was an event study that investigates whether the market for JPMorgan common stock was efficient specifically with respect to the particular information at issue in this case. Significant and appropriate reactions to disclosures of

³¹ During the Alternative Class Period the average month-end bid-ask spread for all stocks in the CRSP database was 0.7%.

³² JPMorgan's average bid average bid-ask spread over the course of the Alternative Class Period in dollars terms was also \$0.01 per share.

³³ In dollar terms, during the Alternative Class Period the average month-end bid-ask spread for all stocks in the CRSP database was \$0.07.

information that corrected or revealed the risks concealed by the alleged misrepresentations and omissions in this case indicate market efficiency, not only generally, but also specifically with respect to the information at issue in this case.

83. The second set of tests collectively examines a broad set of events that occurred over the course of the full year that ends with the Class Period.³⁴ The events tested during this examination period were all earnings and guidance announcements. These tests address whether JPMorgan common stock exhibited market efficiency by examining whether the common stock responded to the increased flow of information that generally transpires on earnings and guidance announcement dates.
84. I examined earnings and guidance announcements collectively by using an F-test and an Ansari-Bradley volatility test. These tests compare the behavior of the price of JPMorgan common stock on the group of earnings and guidance dates to the behavior of the stock price on all other dates in the examination period (which includes the Class Period), to determine whether the stock price reacts to the greater flow of Company-specific information that the finance literature states generally transpires on earnings announcement dates, as compared to all other dates. A pattern of greater dispersion and larger stock price movements on earnings announcement dates indicates market efficiency.

Event Study Test of Market Efficiency

85. The event study is the paramount tool for testing market efficiency, as renowned financial economist and Nobel laureate Eugene Fama attests:

“The cleanest evidence on market-efficiency comes from event studies, especially event studies on daily returns. When an information event can be dated precisely and the event has a large effect on prices, the way one abstracts from expected returns to measure abnormal daily returns is a second-order consideration. As a result, event studies give a clear picture of the speed of adjustment of prices to information.”

“Efficient Capital Markets: II,” by Eugene F. Fama, *Journal of Finance*, 1991, p. 1607.

³⁴ This is the same full year that ends with the Alternative Class Period.

86. Event study analysis is one of the most commonly used analytic methodologies employed by finance researchers. Campbell, Lo, and MacKinlay [1997] present an excellent description and examples of the methodology and write about how it is generally accepted and widely used in academic research.³⁵ Crew, *et al.*, [2007]³⁶ write about how the methodology is generally accepted and widely used in forensic applications.
87. An event study measures how much a stock price rises or falls in response to new, company-specific information. Statistical regression analysis determines how much of a stock price change is explained by market and peer group factors, rather than company-specific information, so that those influences can be statistically factored out. The portion of a stock price change that cannot be attributable to market and peer group factors is called the residual stock price movement or “residual return.” The event study isolates the residual return and also tests whether the residual return can reasonably be explained as merely a random fluctuation.
88. If the stock return over an event period is statistically significant, it indicates that the stock price movement cannot be attributed to market and peer group factors, or to random volatility, but rather was caused by new, company-specific information. Such proof of a cause and effect relationship between such information and the reaction in the stock price establishes market efficiency.

A Caveat About Non-Significant Stock Price Movements

89. It is important to note that an event study tests the joint hypothesis that the security trades in an efficient market and that the valuation impact of the information disseminated on the event date is of such large magnitude as to exceed the threshold for statistical significance. Therefore, a finding of statistical significance indicates market efficiency, but a finding of non-significance does not necessarily establish inefficiency, as a modest non-significant stock price reaction may be the appropriate and efficient stock price reaction to a particular disclosure.

³⁵ Chapter 4 of *The Econometrics of Financial Markets*, by John Y. Campbell, Andrew W. Lo, and A. Craig MacKinlay, Princeton University Press, 1997.

³⁶ “Federal Securities Acts and Areas of Expert Analysis,” by Nicholas I. Crew, *et al.*, in Chapter 18 of the *Litigation Services Handbook; The Role of the Financial Expert*, 4th ed., edited by Roman L. Weil, Peter B. Frank, Christian W. Hughes, and Michael J. Wagner, John Wiley & Sons, Inc., 2007.

90. For example, if a company reports earnings that are in line with the prior expectations of analysts and investors, even though the announcement would be important, the mix of information may not have changed sufficiently on that date to elicit a statistically significant stock price reaction. In this example, a modest stock movement or even no movement at all may be the appropriate stock price reaction. In such a case, the event study finding that the stock return was non-significant would not indicate inefficiency. On the contrary, the appropriately non-significant stock price movement would show that the stock is behaving as it should in an efficient market.
91. Similarly, when a company deceives analysts and investors by concealing important information, the effect of the concealment would generally not be a significant stock price movement at the time of the concealment and over its duration. The concealment would maintain the mix of information as it previously was, so the appropriate price reaction would be a maintenance of the price level where it previously was.
92. Therefore, appropriate candidate events for inclusion in a market efficiency event study must be events on which company-specific information was released that is new, unexpected, and is of such import as reasonably to be expected to elicit a stock price reaction over the threshold for statistical significance.

Selection of Allegation-Related Events

93. Not only did the *Cammer* Court single out the empirical factor as “one of the most convincing ways to demonstrate efficiency,” but it also recognized the special importance of the specific information allegedly misrepresented that is the subject of the litigation:

“The central question under the fraud on the market theory is whether the stock price, *at the time a plaintiff effected a trade*, reflected the ‘misinformation’ alleged to have been disseminated.”
Cammer, 711 F. Supp. at 1282 (emphasis in original).

94. By focusing an event study on disclosures of information related to the allegations in the Complaint, one is able to ascertain whether the market for JPMorgan stock was efficient, not only generally, but also with respect to the particular information at issue in this case. Consequently, the empirical behavior of JPMorgan common stock following the disclosure of allegation-related information best determines whether the market for JPMorgan common stock was efficient during the Class Period.

95. A comprehensive identification of all dates on which disclosures of new, Company-specific information corrected the alleged misrepresentations and omissions is beyond the scope of this report. However, a review of publicly reported news and events during the Class Period, and a review of the Complaint, identify three dates on which new, Company-specific information related to the alleged misrepresentations and omissions was disseminated, which, based on valuation principles, would reasonably have been expected to elicit a stock price reaction over the threshold for statistical significance. Applying these criteria (disclosure of allegation-related information; information of such magnitude as to reasonably be expected to elicit a significant stock price reaction if the market is efficient) identifies the events that are most suitable for a market efficiency event study in this matter.
96. Using these criteria, I identified three event dates within the Class Period that are appropriate for inclusion in the event study: 11 May 2012, 17 May 2012, and 21 May 2012. The disclosures on these dates include the following information:
- i. **11 May 2012** – After the close of trading the previous day, as a result of a more than “\$2 billion trading loss under synthetic credit positions,” JPMorgan lowered 2Q 2012 earnings guidance for the Corporate segment. On the conference call with investors, JPMorgan’s CEO Jamie Dimon admitted that the CIO’s “strategy was flawed, complex, poorly reviewed, poorly executed, and poorly monitored.”³⁷ JPMorgan also disclosed that the model used to compute the previously reported average Value at Risk (“VaR”)³⁸ for the CIO was “deemed inadequate” and as a result the CIO’s actual VaR would almost double.³⁹

³⁷ “JPM – JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012, p. 3.

³⁸ Value at Risk, or VaR, is a measure that shows how much value a company or portfolio may lose over a specified period of time on account of various probabilistic scenarios.

³⁹ “JPM – JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012, p. 2.

- ii. **17 May 2012** – After the close of trading the previous day, the *New York Times* reported that losses in the CIO had surged at least 50% in recent days.⁴⁰ Given the CIO trading losses, among other things, equity analysts at CLSA lowered their earnings estimates for JPMorgan “even further below consensus” for 2Q12, 2012, 2013, and 2014.⁴¹
- iii. **21 May 2012** – Speaking at the Deutsche Bank Global Financial Services Investors conference, Mr. Dimon announced that the Company was suspending its share-buyback program because of losses at the CIO and the Company’s commitment to regulators of a “glide path to increase” its capital to the Basil III target.⁴² Mr. Dimon also admitted that the CIO’s loss was an elementary “Risk 101 mistake.”⁴³

Isolating the Impact of Company-Specific Information

- 97. Event study analysis determines how much of the Company’s stock return following each of the events was driven by Company-specific information as opposed to market and peer group factors.
- 98. The method, which is generally accepted and widely used in econometric modeling, involves running a regression to determine how the price of JPMorgan common stock typically behaved in relation to the overall stock market and its peer group, and then using the regression model to determine how much of each event day’s actual return is explained by the market and peer group factors (“the explained return”).
- 99. The explained return is then subtracted from the actual return, to isolate the residual return, which is the stock’s return after controlling for market and peer group effects.
- 100. I ran a regression modeling the return of JPMorgan common stock as a function of: 1) a constant term, 2) the returns of the overall stock market, and 3) a peer group index return.

⁴⁰ “JPMorgan’s Trading Loss Is Said to Rise at Least 50%,” by Nelson Schwartz and Jessica Silver-Greenberg, *New York Times Dealbook*, 16 May 2012, 9:14 PM.

⁴¹ “Low-on-the-Streets Estimates,” by Mike Mayo and Chris Spahr, CLSA, analyst report, 17 May 2012, p. 1 [CAS-USA00000492].

⁴² “JPMorgan Chase & Co. at Deutsche Bank Global Financial Services Investors Conference,” *Thomson Reuters StreetEvents*, 21 May 2012, p. 3.

⁴³ *Id.*, p. 4.

101. For the overall stock market factor I used the CRSP Market Total Return Index (“Market Index”), which is a generally accepted and widely used measure of the overall stock market performance. The CRSP Market Total Return Index appropriately incorporates payment of dividends by the constituent companies.
102. For the peer group factor, I used the same group of companies that JPMorgan identified as its peers. In its 2012 Proxy statement for the fiscal year ended 31 December 2011, JPMorgan compared its performance to a peer group composed of six companies: American Express, Bank of America, Citigroup, Goldman Sachs, Morgan Stanley, and Wells Fargo.⁴⁴
103. I constructed a peer group index (“Peer Index”) from the prices and returns of these six companies to measure the daily performance of JPMorgan’s peer group, as the Company itself identified these companies as the appropriate peer group. In accordance with generally accepted practice, I constructed a value-weighted index of the constituent companies. Each trading day’s return for the Peer Index is the value-weighted average of the constituent company returns, inclusive of dividends.
104. JPMorgan’s stock prices, dividends, trading volume, and returns are shown in Exhibit-4. Market Index and Peer Index data are presented in Exhibit-5.
105. I ran the regression on daily returns covering the period 23 May 2011 to 21 May 2012, one full year of trading data ending on the last day of the Class Period. I used dummy variables to control for potentially abnormal returns on earnings and guidance announcement dates, and disclosure events.⁴⁵ Using dummy variables to control for potentially important events in the estimation (control) period, especially when those dates are the subject of the event study analysis, so that the model parameters properly reflect typical stock price movements, is a widely used and generally accepted methodology, as noted in the academic and finance literature.⁴⁶

⁴⁴ JPMorgan Chase & Co. DEF 14A, filed 24 April 2012, p. 10.

⁴⁵ This estimation period is also one year ending with the Alternative Class Period.

⁴⁶ See: “Event Studies with a Contaminated Estimation Period,” by Nihat Aktas, Eric de Bodt, and Jean-Gabriel Cousin, *Journal of Corporate Finance*, 2007; “Measuring the Effects of Regulation with Stock Price Data,” by John J. Binder, *The RAND Journal of Economics*, 1985; “Intervention Analysis with Applications to Economic and Environmental Problems,” by G. E. P. Box and G. C. Tiao, *Journal of the American Statistical Association*, 1975; “Testing for Market Efficiency: A Comparison of the Cumulative Average Residual Methodology and Intervention Analysis,” by David F. Larcker, Lawrence A. Gordon and George E. Pinches, *Journal of Financial & Quantitative*

106. The choice of using a one year estimation period that includes the Class Period or events of interest for the regression estimation period is also a widely used and generally accepted methodology in event study analysis.

“Three general choices for the placement of an estimation window are before the event window, surrounding the event window, and after the event window.”

“Materiality and Magnitude: Event Studies in the Courtroom,” David I. Tabak and Frederick C. Dunbar in *Litigation Services Handbook, The Role of the Financial Expert*, 3rd ed., edited by Roman L. Weil, Michael J. Wagner, and Peter B. Frank, John Wiley & Sons, Inc., 2001, p. 19.19.

107. All returns used in the regression are logarithmic returns – that is, the natural logarithm of the ratio of the current day’s closing price plus dividends to the previous day’s closing price. Logarithmic returns are commonly used in event studies and equity analysis. Analysts and researchers generally use logarithmic returns instead of percent price changes because of various computational advantages.⁴⁷
108. The regression results are presented in Exhibit-6.⁴⁸
109. I computed the explained portion of the JPMorgan common stock return on each event date by adding: 1) the estimated regression intercept term, 2) the respective day’s Market Index return multiplied by the Market Index coefficient estimated by the regression, and 3) the respective day’s Peer Index return multiplied by the regression’s Peer Index coefficient.
110. I then computed the residual return for each event date by subtracting the respective explained return from the actual return.

t-Test

111. For each event, a statistical test called a *t*-test was conducted to determine whether the residual return of JPMorgan stock was statistically significant. Statistical significance means that the event return after controlling for the market and peer group effects was of

Analysis, 1980; “Measuring Abnormal Performance: The Event Parameter Approach Using Joint Generalized Least Squares,” by Paul H. Malatesta, *The Journal of Financial and Quantitative Analysis*, 1986; “Conditioning the Return-Generating Process on Firm-Specific Events: A Discussion of Event Study Methods,” by Rex Thompson, *The Journal of Financial and Quantitative Analysis*, 1985.

⁴⁷ The Appendix presents the mathematical formula for the logarithmic return and a discussion of the measure.

⁴⁸ As the estimation periods are the same, the regression results for the Alternative Class Period are the same as the regression results for the Class Period.

such magnitude that it cannot be explained by random volatility, but alternatively must have been caused by new Company-specific information. A *t*-test compares the residual return on an event date to the typical residual return exhibited over the regression estimation period (control period). If the event date residual return is far greater (positively or negatively) than the typical residual return, the *t*-test indicates that the residual return is statistically significant.⁴⁹

112. The results of the event study are presented below and summarized in Exhibit-7.⁵⁰

Event Study Results: 11 May 2012

113. On 10 May 2012, after the close of trading, JPMorgan lowered 2Q 2012 earnings guidance for the Corporate segment, due to a more than “\$2 billion trading loss under synthetic credit positions.”⁵¹ Further, because the synthetic credit portfolio still had a lot of volatility and risk, the Company acknowledged it could incur additional losses of up to \$1 billion.⁵² JPMorgan also disclosed that it had implemented a new Value-at-Risk (“VaR”) model in Q1 2012 which was now “deemed inadequate,” so the Company went back to the model it had used for “the prior several years.”⁵³ As result, the CIO’s average VaR for Q1 2012 was actually \$129 million,⁵⁴ nearly double the previously reported average of \$67 million.⁵⁵
114. On a 10 May 2012 conference call with investors held after the close of trading, CEO Dimon, reassured investors that the CIO’s losses would not impact the Company’s capital plan for 2012, which included a plan to repurchase \$15 billion of the Company’s common stock.⁵⁶ Mr. Dimon also described the purported hedging strategy as “flawed, complex,

⁴⁹ The test is called the *t*-test because it involves the computation of a *t*-statistic, which is the event day residual return divided by the standard deviation of residual returns from the control period, *i.e.*, the regression estimation data comprising all other days. If the absolute value of the *t*-statistic is greater than the critical *t*-statistic value (1.97 for large samples), the likelihood that the residual return could have been caused by random volatility alone is less than 5%, which is generally accepted to be so unlikely that the random volatility explanation can be rejected, and the stock return for that day is deemed statistically significant.

⁵⁰ As the estimation periods are the same, the event study results for the Alternative Class Period are the same as the event study results for the Class Period.

⁵¹ “JPM – JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012, p. 1; and JPMorgan Chase & Co., Form 10-Q for the quarter ended 31 March 2012, filed 10 May 2012, p. 9.

⁵² “JPM – JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012, p. 3.

⁵³ *Id.*, 2.

⁵⁴ JPMorgan Chase & Co., Form 10-Q for the quarter ended 31 March 2012, filed 10 May 2012, p. 73.

⁵⁵ “JPM – JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012, p. 2; and JPMorgan Chase & Co., Form 8-K, filed 13 April 2012, p. 42.

⁵⁶ “JPM – JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012, pp. 3-4.

poorly reviewed, poorly executed, and poorly monitored.” He added, “The portfolio has proven to be riskier, more volatile, and less effective as an economic hedge than we thought.”⁵⁷

115. Analysts were critical of JPMorgan, calling the trading loss a “black eye” for the Company’s risk management reputation and questioning whether the CIO was applying prudent hedges as it was supposed to be doing.

“While a manageable hit to earnings, it is clearly a black eye for JPM’s risk management reputation, and does no favors for investors’ risk perceptions of the industry. For that reason, we believe this event is likely to weigh on valuations for the group until we can get confirmation that other banks avoided such hedging losses – not likely until we get closer to 2Q earnings results in July.”

“\$2B Hedging Loss a Black Eye to Risk Management,” by James Mitchell, The Buckingham Research Group, analyst report, 11 May 2012, p. 1.

“JPM (\$2B) ‘Hedging’ Loss -- Untimely Surfacing of a Vocational Hazard: In yet another example of how making huge speculative bets with shareholders’ funds seems to be an embedded behavioral problem for the ‘Masters of the Universe’ traders at giant banks, JPMorgan Chase & Co. (JPM - \$40.74) yesterday reported a major trading loss in credit derivatives by its Chief Investment Office, which is supposed to adopt prudent hedges against risks taken by its different trading units.”

“Morning Note,” by Thomas Mitchell, Miller Tabak + Co., analyst report, 11 May 2012, p. 1 (emphasis is original).

“Though a \$2 billion trading loss is no light matter, the company still has plenty of capital and generates enough income in its other business lines to manage this loss. The bigger issue, in our view, is the hit to credibility. JPM has been regarded on the street as the best managed universal bank. With this blemish, questions will be raised about further exposures and whether risk management practices are adequate.”

“The Prize Fighter is Knocked Down But Not Out,” by Gerard Cassidy, *et al.*, RBC, analyst report, 11 May 2012, p. 1.

116. On 11 May 2012, JPMorgan common stock fell 9.74% (on a logarithmic return basis). That day, the Market Index return was -0.27%, and the Peer Index return was -1.59%. According to the regression results, the explained portion of JPMorgan’s stock return on that day equals 0.03%, plus 0.14 times the Market Index return, plus 0.83 times the Peer

⁵⁷ *Id.*, p. 3.

Index return. The difference between the actual return of -9.74% and the explained return of -1.32% is -8.41%, which is the residual return for JPMorgan stock that day – the portion of the return that is unexplained by market and peer group effects.

117. A residual return of -8.41% is an unusually large negative one-day return for JPMorgan common stock. That residual return is associated with a *t*-statistic value of -9.76, which indicates that the residual return was too severe to have been a random fluctuation. The likelihood of obtaining a residual return of this magnitude and associated *t*-statistic given that particular explanation is virtually nil. Therefore, the stock return is deemed statistically significant.
118. The magnitude of the residual return on 11 May 2012 and its statistical significance indicate that, to a high degree of statistical certainty, the price of JPMorgan stock decreased in response to the negative Company news that day. In fact, such a large *t*-statistic enables one to state with more than 99% confidence that the JPMorgan stock decline that day did not occur by random chance alone, but instead was caused by Company-specific news.

Event Study Results: 17 May 2012

119. On 16 May 2012, after the close of trading, the *New York Times* reported that the Company's trading losses had surged by at least 50% due to the "faster deterioration in the underlying credit market positions held by the bank."

"The trading losses suffered by JPMorgan Chase have surged in recent days, surpassing the bank's initial \$2 billion estimate by at least \$1 billion, according to people with knowledge of the losses. When Jamie Dimon, JPMorgan's chief executive, announced the losses last Thursday, he indicated they could double within the next few quarters. But that process has been compressed into four trading days as hedge funds and other investors take advantage of JPMorgan's distress, fueling faster deterioration in the underlying credit market positions held by the bank."
"JPMorgan's Trading Loss Is Said to Rise at Least 50%," by Nelson Schwartz and Jessica Silver-Greenberg, *New York Times Dealbook*, 16 May 2012, 9:14 PM.

120. Citing the CIO's trading losses, among other things, CLSA analysts lowered their earnings estimates for JPMorgan. The CLSA equity analyst report also noted that the CIO losses "reveal cracks in the business model" and the "lack of integration of the risk function of CIO with the rest of the company."

“Given the CIO trading losses, slower capital markets and the impact of low rates on the margin, we are lowering our JPMorgan estimates to even further below consensus for 2Q12 (to \$0.19 vs \$0.96 consensus), 2012 (to \$3.35 vs \$4.67), 2013 (to \$4.35 vs \$5.54) and 2014 (to \$4.95 vs \$6.08). The CIO trading losses are not life-threatening (JPMorgan had \$60bn of credit losses for the prior three years) but they do reveal cracks in the business model that, in turn, can reduce firm-wide risk tolerance in areas such as buybacks, investments and trading. The lingering issue is lack of adequate integration of the risk infrastructure and a break in the business model given lack of integration of the risk function in CIO with the rest of the company - this is one key justification for the financial conglomerate model.”

“Low-on-the-Streets Estimates,” by Mike Mayo and Chris Spahr, CLSA, analyst report, 17 May 2012, p. 1 [CAS-USA00000492].

121. On 17 May 2012, JPMorgan common stock fell 4.41%. That day, the Market Index return was -1.64%, and the Peer Index return was -1.82%. According to the regression model, the explained return for JPMorgan stock was -1.72% and the residual return was -2.69%.
122. A residual return of -2.69% is an unusually large negative one-day return for JPMorgan common stock. The *t*-statistic associated with the residual return is -3.12, indicating that the large negative residual return is highly statistically significant. This finding proves that the -2.69% residual return was caused by new Company-specific information and not random volatility, the overall stock market, or a peer group effect. In fact, such a large *t*-statistic enables one to state with more than 99% confidence that the JPMorgan stock decline that day did not occur by random chance alone, but instead was a reaction to the negative Company news.

Event Study Results: 21 May 2012

123. On 21 May 2012, speaking at the Deutsche Bank Global Financial Services Investors Conference, JPMorgan’s CEO announced that the Company was suspending its share buyback program because of the CIO losses.⁵⁸ Eleven days earlier, Mr. Dimon had reassured investors that the share buyback program would not be affected by the CIO losses.

⁵⁸ “JPMorgan Chase & Co. at Deutsche Bank Global Financial Services Investors Conference,” *Thomson Reuters StreetEvents*, 21 May 2012.

“I have been asked a lot of questions about capital distribution. I made the mistake at the shareholder meeting saying I hope to continue dividends. No, we intend to maintain the dividend. As to share repurchase, we decided to suspend our share repurchase program. We made a commitment to ourselves and to the regulators of a glide path to increase it and the regulators are quite clear to increase it to what we think our Basel III target will be. We don’t know what that it is but assuming it is 9.5, we want to show steady progress. You should not interpret this comment on the size of the loss at all and we intend to restart it but we are not going to tell people when we do that. We want to box this thing first.”
“JPMorgan Chase & Co. at Deutsche Bank Global Financial Services Investors Conference,” *Thomson Reuters StreetEvents*, 21 May 2012, p. 3.

124. On the news that JPM was suspending its share buyback program, Credit Suisse analysts lowered their EPS estimates for the Company. Citing suspension of the buyback, Evercore downgraded JPMorgan.

“We are lowering our forecasts to reflect the absence of share buyback in our 2Q/3Q’12 EPS estimates. Today’s announcement represents a shift in tone from the May 10th conference call in which management indicated that the losses would not affect their capital plans. However, the company indicated today that it will begin buying back shares once losses are more measurable.

...

We are reducing our 2012, 2013 and 2014 EPS estimates to \$4.50, \$5.40 and \$5.90, respectively (from \$4.60, \$5.60 and \$6.10) to reflect a lower buyback assumption.”

“Lowering EPS Estimates; Share Buyback Program on Hold,” by Moshe Orenbuch and Jill Glaser, *Credit Suisse*, analyst report, 21 May 2012, p. 1.

“Evercore – Downgrade to equalweight from overweight, target at \$37 – ‘Regarding putting a box around CIO, we too have found it challenging to ring-fence this issue in terms of potential near-term pain (related to this supposed one repositioning gone wrong) and longer-term implications. A key point of our [overweight] thesis had been differentiation in capital deployment, which is now off the table in terms of buybacks. We would not be surprised if this lasts through year-end given lingering CIO trading issue, renewed regulatory scrutiny, and ongoing macro uncertainty.’”

“WSJ BLOG/Deal Journal: J.P. Morgan Shares Now Negative for Year as Analysts Add Cuts,” by David Benoit, *Dow Jones Newswires*, 21 May 2012.

125. On 21 May 2012, JPMorgan common stock fell 2.97%. That day, the Market Index return was 1.78%, and the Peer Index return was 0.52%. According to the regression model, the explained return for JPMorgan stock was 0.71% and the residual return was -3.68%.

126. A residual return of -3.68% is an unusually severe negative one-day return for JPMorgan common stock. The t -statistic associated with the residual return is -4.27, indicating that the large negative residual return is highly statistically significant, proving that the -3.68% residual return was caused by new Company-specific information and not random volatility, the overall stock market, or a peer group effect. In fact, such a large t -statistic enables one to state with more than 99% confidence that the JPMorgan stock decline that day did not occur by random chance alone, but instead was caused by the negative Company news.

Allegation-Related Event Study Summary

127. The event study results show that for all three of the disclosure events identified as appropriate candidates for inclusion in a market efficiency event study, there was a strongly statistically significant price reaction to Company news. This finding proves not only that the market for JPMorgan stock was efficient, but also that it was efficient specifically with respect to the information at issue in this case.
128. An event study is essentially a controlled experiment that allows one to observe the market's valuation of the stock with and without the information at issue. Prior to an event, the stock is valued in the marketplace without the new information. After the event, the stock is valued with the information. The significant stock price changes elicited by the three allegation-related disclosures reflect the effect of the new information.

Empirical Tests Conducted on Earnings and Guidance Announcement Events

129. In addition to assessing market efficiency by observing whether the stock price changed appropriately and significantly on disclosure dates, one can also test for market efficiency by assessing whether the stock generally moves more on days with greater information flow than on more typical non-news days. If the stock price movements are generally greater among a collection of news event dates than among all other non- or lesser news days, this result would establish that there is a cause-and-effect relationship between the flow of information and stock price movements, which indicates market efficiency.
130. I conducted collective empirical tests of market efficiency based on these principles.

Earnings and Guidance Announcement Events

131. I focused the analysis on earnings and guidance announcements. A company's financial results and forecasts are among the most important considerations to investors assessing the value of its stock. While not every earnings announcement contains new, unexpected, highly valuation impactful information, the literature notes that such information more frequently arrives on earnings announcement dates than on ordinary dates.

“No other figure in the financial statements receives more attention by the investment community than earnings per share. The relationship between accounting earnings and security prices is probably the single most important relationship in security analysis, and its prominence is reflected in the attention given to price-earnings ratios.”

Financial Reporting an Accounting Revolution, 3rd ed., William H. Beaver, 1998, p. 38.

“Analysts, investors, senior executives, and boards of directors consider earnings the single most important item in the financial reports issued by publicly held firms.”

“Earnings Management to Exceed Thresholds,” Francois Degeorge, Jayendu Patel, and Richard Zeckhauser, *Journal of Business*, 1999, p. 1.

132. Numerous well-known and highly-regarded academic studies (for example, Beaver [1968], Ball and Brown [1968], Ball [1978], Watts [1978], Patell and Wolfson [1984], and Ball and Kothari [1991]) have specifically examined stock price movements caused by earnings announcements, and concur that earnings announcements are unusually important information events generally.
133. I tested whether JPMorgan's common stock price generally exhibited larger movements on earnings announcement and guidance days, which are known to be associated with increased information flow, as compared with more ordinary days over the course of the estimation period, which includes the Class Period. If the higher information days (“news days”) generally exhibited larger stock price movement than all other days (“non-news days”), collectively, this would indicate a cause and effect relationship between the release of new, Company-specific information and the reaction of the Company's stock price, which is the hallmark of market efficiency.
134. Earnings and guidance changes were announced on the following dates in the control period, which includes the Class Period:

- i. 14 July 2011 – JPMorgan reported financial results for Q2 2011 (quarter ended 30 June 2011).⁵⁹
- ii. 13 October 2011 – JPMorgan reported financial results for 3Q 2011 (quarter ended 30 September 2011).⁶⁰
- iii. 13 January 2012 – JPMorgan reported full year and 4Q 2011 financial results (quarter ended 31 December 2011).⁶¹
- iv. 13 April 2012 – JPMorgan reported financial results for 1Q 2012 (quarter ended 31 March 2012).⁶²
- v. 10 May 2012 – after the close of trading, JPMorgan lowered 2Q 2012 earnings guidance for the Corporate segment (quarter ended 30 June 2012).⁶³

F-Test and Ansari-Bradley Test Analyses of Event Return Dispersion

135. Announcements of financial results and guidance sometimes constitute unexpected good news and sometimes constitute unexpected bad news. In an efficient market, the stock price would rise after unexpected good news and fall after unexpected bad news. Therefore, there would be a wider dispersion of returns on earnings and guidance announcement dates, as long as some of the announcements contained some unexpected good or bad news.
136. The dispersion in the distribution of a group's stock price returns is commonly measured by the sample standard deviation statistic. Comparing the sample standard deviation of returns on earnings and guidance announcement days to the sample standard deviation of returns for all other days, thus tests market efficiency. A greater sample standard deviation for the earnings and guidance day returns would indicate market efficiency.

⁵⁹ "JPMorgan Chase & Co - JPMorgan Chase Reports Second-Quarter 2011 Net Income of \$5.4 Billion, or \$1.27 Per Share; Revenue(1) of \$27.4 Billion, ...," *Business Wire*, Company press release, 14 July 2011, 7:22 AM.

⁶⁰ "JPMorgan Chase & Co - JPMorgan Chase Reports Third-Quarter 2011 Net Income of \$4.3 Billion, or \$1.02 Per Share, on Revenue (1) of \$24.4 Billion," *Business Wire*, Company press release, 13 October 2011, 7:42 AM.

⁶¹ "JPMorgan Chase Reports Fourth-Quarter 2011 Net Income of \$3.7 Billion, or \$0.90 Per Share, on Revenue (1) of \$22.2 Billion," *Business Wire*, Company press release, 13 January 2012, 6:59 AM.

⁶² "JPMorgan Chase & Co - JPMorgan Chase Reports First-Quarter 2012 Net Income of \$5.4 Billion, or \$1.31 Per Share; ...," *Business Wire*, Company press release, 13 April 2012, 7:09 AM.

⁶³ "JPM – JPMorgan Chase & Co. Corporate Conference Call," *Thomson Reuters StreetEvents*, 10 May 2012, p. 1; and JPMorgan Chase & Co., Form 10-Q for the quarter ended 31 March 2012, filed 10 May 2012, p. 9.

137. The F-test and Ansari-Bradley test are statistical tests that compare standard deviations between two groups. I ran these tests to ascertain whether the dispersion of stock price movements on earnings and guidance dates indicate market efficiency, or alternatively, inefficiency.
138. I ran both tests on the residual returns for JPMorgan common stock, that is, the computed portion of the stock price returns remaining after controlling for the impact of market and peer group effects. Running the tests on residual returns focuses the tests more precisely on the effects of Company-specific information on the Company's stock price.

F-Test

139. The sample standard deviation of the earnings and guidance announcement days' residual returns was 4.07%. The sample standard deviation of all other days' returns was 0.90%. Clearly, the earnings and guidance announcement days' sample standard deviation was greater than the sample standard deviation for all other days – over four times greater.
140. An F-test assesses whether the difference between the two sample standard deviations is statistically significant, or alternatively, a potentially random result. The F-statistic for these two samples is 20.28, which is greater than the 99% confidence level critical F-statistic value of 2.41 (with 4 and 246 degrees of freedom), indicating that the difference in sample standard deviations is statistically significant and meaningful.
141. The F-test finds that the dispersion of earnings and guidance announcement days' returns is significantly greater than the dispersion of returns for all other days. This result demonstrates that the price of JPMorgan common stock moved more on earnings and guidance announcement days than on other days. This statistical result indicates that there was a cause and effect relationship between the release of new information and reactions in the JPMorgan common stock price, which therefore establishes that JPMorgan common stock traded in an efficient market.

Ansari-Bradley Test

142. The Ansari-Bradley test is another test that determines whether or not two data samples have significantly different dispersions, which, as discussed above, when applied to a sample of earnings and guidance announcement dates, in comparison to all other dates, would indicate market efficiency. The Ansari-Bradley test is a well-regarded and generally

accepted test for comparing sample dispersions and is presented and described in numerous authoritative textbooks.⁶⁴

143. Applied to the earnings and guidance event returns and the sample of all other returns observed during the estimation period and the Class Period, the Ansari-Bradley test, like the F-test, finds with an extremely high degree of statistical certainty that the dispersion of earnings and guidance event returns was significantly greater than the dispersion of returns on all other days. The Ansari-Bradley C-statistic for the two samples of JPMorgan stock residual returns is -2.55, the absolute value of which is greater than the critical C-statistic threshold of 1.96 for significance at the 95% confidence level. This result is further proof that the price of JPMorgan common stock moved more on earnings and guidance announcement days than on other days during the estimation period and the Class Period.
144. This statistical test result indicates that there was a cause and effect relationship between the release of new, Company-specific information and reactions in the JPMorgan common stock price, which therefore establishes that JPMorgan common stock traded in an efficient market during the Class Period.

SUMMARY

145. JPMorgan common stock traded on the NYSE where trading is facilitated by a Designated Market Maker. The Company was covered by numerous analysts. Institutional ownership of JPMorgan stock was widespread. Trading was active. Market capitalization and float were high. Prior to the Class Period, JPMorgan filed an S-3 registration statement, and financial information about the Company was readily available to investors and analysts. The stock's bid-ask spread was narrow.
146. Not only did the market for JPMorgan common stock satisfy the *Cammer* and *Krogman* factors that indicate market efficiency, but it also satisfied the empirical *Cammer* factor, which demonstrates the essence of market efficiency.

⁶⁴ For example: *Practical Nonparametric Statistics*, 2nd edition, by J.W. Conover, John Wiley & Sons, 1980; *Applied Nonparametric Statistics*, by Wayne W. Daniel, Houghton Mifflin, 1978; *Nonparametric Statistical Methods*, by Wolfe Hollander, John Wiley & Sons, 1973; *Beyond ANOVA: Basics of Applied Statistics*, by Rupert, G. Miller, Jr., John Wiley & Sons, 1986; and *Biostatistical Analysis*, 3rd edition, by Jerrold H. Zar, Prentice-Hall, 1996.

147. The event study proved that there was a cause and effect relationship between new, Company-specific information and appropriate movements in the JPMorgan stock price. Dispersion tests focusing on earnings and guidance announcement event returns provided further proof that the stock price reacted to the flow of information – the essence of market efficiency.
148. Given these facts, I conclude that JPMorgan common stock traded in an efficient market over the course of the Class Period.

PER SHARE DAMAGE METHODOLOGY

149. Plaintiffs' counsel asked me to explain how per share damages would be measured for each member of the proposed class. Assuming a Plaintiff verdict on the allegations of fraud, damages would be measured as follows:
- i. First, an empirical analysis, such as that described herein, would be used to establish that disclosures, correcting the alleged misrepresentations and omissions or revealing the previously concealed risks, caused the stock price to fall significantly. This analysis, after controlling for potentially non-fraud related information, would establish that the alleged misrepresentations and omissions had caused the stock price to be artificially inflated, and that the corrective disclosures caused the inflation to dissipate, in turn causing investor losses. This analysis would apply on a Class-wide basis.
 - ii. Second, an inflation ribbon (or time series) would be constructed, indicating how much artificial inflation caused by the alleged misrepresentations and omissions was in the stock price on each day during the Class Period. This is generally done by working chronologically backwards from the last corrective disclosure to the start of the Class Period, adding the alleged fraud-related residual price declines as they occurred. Inflation prior to a corrective disclosure that dissipated inflation is greater than the inflation afterward by the amount of inflation that dissipated. This analysis would also apply on a Class-wide basis.

iii. Third, the measure of per share damages generally applied in 10b-5 cases is the reduction in the inflation ribbon over an investor's holding period (the economic/inflation loss). That is, for each member of the Class, per share damages would be calculated as the difference between the inflation on the date shares were purchased and the inflation on the date those same shares were subsequently sold. Per share damages are limited, however, to be no greater than the decline in share price over the holding period, which is the investment loss actually sustained. For any shares sold in the 90 days after the end of the Class Period, per share damages would be calculated as the lesser of the reduction in the dollar inflation over the investor's holding period (the economic/inflation loss), or the decline in the stock price (the investment loss), where the terminal stock price is deemed to be the average price from the final corrective disclosure date to the sale date. For any shares held 90 days or more beyond the final corrective disclosure, damages would equal the lesser of the reduction in the dollar inflation over the investor's holding period (the economic/inflation loss) or the decline in the stock price (the investment loss), where the terminal stock price is deemed to be the average price over the 90 days following the final corrective disclosure. The calculation of each Class member's damages would be a mechanical arithmetical exercise, applying the results of the Class-wide analyses described above to each Class member's trading data.

150. Consequently, each class member's per share damages can be computed in the same way, common to all class members, using readily available daily pricing information, in accordance with widely used and generally accepted methodologies and the statute. I have not yet been asked to calculate Class-wide damages – an analysis that depends in part on the completion of ongoing discovery. However, the methodology described above is a generally accepted and widely used methodology for calculating damages consistently on a Class-wide basis.

LIMITING FACTORS AND OTHER ASSUMPTIONS

151. This declaration is furnished solely for the purpose of court proceedings in the above referenced matter and may not be used or referred to for any other purpose. The analysis and opinions contained in this report are based on information available as of the date of this report. I reserve the right to supplement or amend this report, including in the event additional information becomes available.


Steven P. Feinstein, Ph.D., CFA

APPENDIX: LOGARITHMIC RETURNS

A1-1. Logarithmic returns, rather than percent change returns are commonly used in stock return regressions and event study analysis and were used in the regression modeling here. The formula for a logarithmic return is:

$$R_t = \ln\left(\frac{P_t + d_t}{P_{t-1}}\right)$$

where:

R_t is the logarithmic return on day t ;
 P_t is the stock price at the end of day t ;
 P_{t-1} is the stock price from the previous day, day $t-1$;
 d_t is the dividend on day t , if any.

A1-2. The formula for converting a logarithmic return into a dollar return is:

$$DR_t = P_{t-1} \cdot (e^{R_t} - 1)$$

where:

DR_t is the dollar return on day t ;
 P_{t-1} is the stock price from the previous day, day $t-1$;
 e is natural e (approximately 2.7);
 R_t is the logarithmic return on day t .

A1-3. If a stock falls from \$20 to \$18, the percent change in price is -10%, equal to the \$2 decline divided by the original \$20 price. The logarithmic return, however, is -10.54%, equal to $\ln(\$18/\$20)$.

A1-4. The logarithmic return relates a price change to an average of the original, final, and intervening prices over the course of a price decline. As such, for large price declines, it is possible for a logarithmic price decline to exceed 100%, since the price decline may be greater than the average of the beginning and ending prices.

A1-5. An attractive feature of a logarithmic return is that it can be decomposed into contributing factors linearly. That is, the portion of a logarithmic return caused by company-specific information is isolated by subtracting from the total logarithmic return the portion of the total return caused by market and peer group factors.

Exhibit-1

Documents and Other Information Considered

CASE DOCUMENTS

- Second Amended Consolidated Class Action Complaint, dated 15 April 2013.
- Defendants' Reply Memorandum in Further Support of Their Motion to Dismiss the Second Amended Consolidated Class Action Complaint, dated 11 September 2013.
- Memorandum Decision and Order, dated 31 March 2014.
- Proposed Third Amended Class Action Complaint, dated 16 January 2015.

NEWS ARTICLES / PRESS RELEASES

- Factiva news articles from 1 January 2010 to 31 May 2012, downloaded using the following search parameters: Text Field: "Treasury" or "CIO" or "Chief Investment Office or "structural market risk" or "trading desk"; Sources Field: The Wall Street Journal, Reuters Newswires, Dow Jones Newswires, Major News and Business Publications, Press Release Wires – All Sources; Company: JPMorgan Chase & Co.; All Subjects; All Industries; All Regions.
- Factiva news articles from 11 May 2012 to 13 July 2012, downloaded using the following search parameters: Sources Field: The Wall Street Journal, Reuters Newswires, New York Times; Company: JPMorgan Chase & Co.; All Subjects; All Industries; All Regions.
- Factiva news articles from 1 January 2011 to 30 June 2012, downloaded using the following search parameters: Text Field: "earnings" or "guidance"; Sources Field: Press Release Wires; Company: JPMorgan Chase & Co.; All Subjects; All Industries; All Regions.
- "JPMorgan Chase & Co - JPMorgan Chase Reports First-Quarter 2011 Net Income of \$5.6 Billion, or \$1.28 Per Share, on Revenue (1) of \$25.8 Billion," *Business Wire*, Company Press Release, 13 April 2011, 7:02 AM.
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- “WSJ Blog/MarketBeat: J.P. Morgan Shares Tumble After ‘Significant Mark-To-Market Losses’ At Credit Unit,” by Steven Russolillo, *Dow Jones Newswires*, 11 May 2012.
- “JPMorgan’s Trading Loss Is Said to Rise at Least 50%,” by Nelson Schwartz and Jessica Silver-Greenberg, *New York Times Dealbook*, 16 May 2012, 9:14 PM.
- “WSJ Blog/Deal Journal: J.P. Morgan Shares Now Negative for Year as Analysts Add Cuts,” by David Benoit, *Dow Jones Newswires*, 21 May 2012.

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- ISI Research, 20 February 2012.
- Macquarie Research, 21 February 2012.
- Deutsche Bank, 22 February 2012.
- Morgan Stanley, 23 February 2012.
- Credit Suisse, 24 February 2012.
- ISI Research, 26 February 2012.
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- Goldman Sachs, 28 February 2012.
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- Keefe, 28 February 2012.
- Oppenheimer, 28 February 2012.
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- Rochdale Securities, 29 February 2012.
- Sandler O'Neil, 29 February 2012.
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- Sterne, Agee & Leach, Inc., 29 February 2012.
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- Wells Fargo, 29 February 2012.
- Barclays, 1 March 2012.
- Keefe, 1 March 2012.
- Macquarie Research, 6 March 2012.
- Bernstein, 7 March 2012.
- Credit Suisse, 7 March 2012.
- ISI Research, 7 March 2012.
- Guggenheim Securities, 8 March 2012.
- Morgan Stanley, 8 March 2012.
- Guggenheim Securities, 9 March 2012.

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- ISI Research, 9 March 2012.
- S&P Capital IQ, 12 March 2012.
- Sandler O'Neil, 12 March 2012.
- Sandler Oneill & Partners, 12 March 2012.
- Bernstein, 13 March 2012.
- ISI Research, 13 March 2012.
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- Bernstein, 29 March 2012.
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- Bernstein, 3 April 2012.
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- Macquarie Research, 3 April 2012.
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- Barclays, 5 April 2012.
- Evercore, 8 April 2012.
- Goldman Sachs, 9 April 2012.
- Rochdale Securities, 9 April 2012.
- Trefis, 9 April 2012.
- Bernstein, 10 April 2012.
- Goldman Sachs, 11 April 2012.

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- Sandler O'Neil, 11 April 2012.
- Sandler Oneill & Partners, 11 April 2012.
- S&P Capital IQ, 12 April 2012.
- Bernstein, 13 April 2012.
- Buckingham Research, 13 April 2012.
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- Evercore, 15 April 2012.
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- Macquarie Research, 16 April 2012.
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- Morgan Stanley, 16 April 2012.
- Rochdale Securities, 16 April 2012.
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- Sterne, Agee & Leach, Inc., 16 April 2012.
- UBS, 16 April 2012.
- S&P Capital IQ, 18 April 2012.
- ISI Research, 24 April 2012.
- Macquarie Research, 24 April 2012.
- ISI Research, 25 April 2012.
- Bernstein, 26 April 2012.

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- Goldman Sachs, 27 April 2012.
- Bernstein, 30 April 2012.
- Wells Fargo, 30 April 2012.
- Bernstein, 1 May 2012.
- ISI Research, 1 May 2012.
- Morgan Stanley, 2 May 2012.
- Bernstein, 8 May 2012.
- ISI Research, 9 May 2012.
- Keefe, 9 May 2012.
- Rochdale Securities, 9 May 2012.
- UBS, 9 May 2012.
- Bernstein, 10 May 2012.
- Evercore, 10 May 2012.
- Goldman Sachs, 10 May 2012.
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- ISI Research, 13 May 2012.
- Bernstein, 14 May 2012.
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- Oppenheimer, 14 May 2012.
- S&P Capital IQ, 14 May 2012.
- Sterne, Agee & Leach, Inc., 14 May 2012.
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- Keefe, 22 May 2012.
- Bernstein, 24 May 2012.
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- Bernstein, 31 May 2012.
- ISI Research, 31 May 2012.
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- Bernstein, 5 June 2012.
- Evercore, 5 June 2012.
- Macquarie Research, 5 June 2012.

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- Bernstein, 6 June 2012.
- ISI Research, 6 June 2012.
- Bernstein, 7 June 2012.
- Goldman Sachs, 7 June 2012.
- Bernstein, 8 June 2012.
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- Morgan Stanley, 11 June 2012.
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- Bernstein, 13 June 2012.
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- Bernstein, 2 July 2012.
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- Evercore, 8 July 2012.
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- Bernstein, 9 July 2012.
- Evercore, 9 July 2012.
- Bernstein, 10 July 2012.
- ISI Research, 11 July 2012.
- RBC Capital, 12 July 2012.

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- Buckingham Research, 13 July 2012.
- Credit Suisse, 13 July 2012.
- Deutsche Bank, 13 July 2012.
- Evercore, 13 July 2012.
- Goldman Sachs, 13 July 2012.
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- Keefe, 16 July 2012.
- Macquarie Research, 16 July 2012.
- Morgan Stanley, 16 July 2012.
- RBC Capital, 16 July 2012.
- Rochdale Securities, 16 July 2012.
- Sandler O'Neil, 16 July 2012.
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- Sterne, Agee & Leach, Inc., 16 July 2012.
- Strategic International Securites, 16 July 2012.
- Wells Fargo, 16 July 2012.
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- Miller Tabak & Co., 18 July 2012.
- ISI Research, 24 July 2012.
- Bernstein, 26 July 2012.
- Keefe, 27 July 2012.
- UBS, 27 July 2012.
- Deutsche Bank, 30 July 2012.
- Sandler O'Neil, 2 August 2012.
- Sandler Oneill & Partners, 2 August 2012.
- RBC Capital, 3 August 2012.
- Goldman Sachs, 7 August 2012.
- Bernstein, 8 August 2012.
- Credit Suisse, 8 August 2012.
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- Bernstein, 10 August 2012.
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- Sterne, Agee & Leach, Inc., 16 August 2012.
- ISI Research, 20 August 2012.
- Evercore, 22 August 2012.
- ISI Research, 22 August 2012.
- ISI Research, 26 August 2012.
- ISI Research, 28 August 2012.
- Bernstein, 29 August 2012.
- Bernstein, 5 September 2012.

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- Buckingham Research, 6 September 2012.
- JMP Securities, 6 September 2012.
- Bernstein, 7 September 2012.
- Morgan Stanley, 10 September 2012.
- Trefis, 10 September 2012.
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- ISI Research, 12 September 2012.
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- Trefis, 21 September 2012.
- Bernstein, 25 September 2012.
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- Bernstein, 28 September 2012.
- ISI Research, 30 September 2012.
- ISI Research, 1 October 2012.
- Keefe, 1 October 2012.
- Macquarie Research, 2 October 2012.
- Rochdale Securities, 2 October 2012.
- Buckingham Research, 3 October 2012.
- Evercore, 3 October 2012.
- Evercore, 4 October 2012.
- Rochdale Securities, 4 October 2012.
- Barclays, 5 October 2012.
- Bernstein, 5 October 2012.
- ISI Research, 8 October 2012.
- Goldman Sachs, 9 October 2012.
- ISI Research, 9 October 2012.
- ISI Research, 10 October 2012.
- Trefis, 11 October 2012.
- Wells Fargo, 11 October 2012.
- Buckingham Research, 12 October 2012.
- Credit Suisse, 12 October 2012.
- Deutsche Bank, 12 October 2012.
- Evercore, 12 October 2012.
- Goldman Sachs, 12 October 2012.
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Documents and Other Information Considered

- ISI Research, 12 October 2012.
- JMP Securities, 12 October 2012.
- Keefe, 12 October 2012.
- Morgan Stanley, 12 October 2012.
- Oppenheimer, 12 October 2012.
- Rochdale Securities, 12 October 2012.
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- RBC Capital, 14 October 2012.
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- UBS, 15 October 2012.
- RBC Capital, 19 October 2012.
- Goldman Sachs, 22 October 2012.
- ISI Research, 23 October 2012.
- ISI Research, 24 October 2012.
- Bernstein, 31 October 2012.
- ISI Research, 31 October 2012.
- ISI Research, 2 November 2012.
- Keefe, 6 November 2012.
- Barclays, 8 November 2012.
- Evercore, 8 November 2012.
- Guggenheim Securities, 8 November 2012.
- Morgan Stanley, 8 November 2012.
- Sandler O'Neil, 8 November 2012.

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Documents and Other Information Considered

- Sandler Oneill & Partners, 8 November 2012.
- UBS, 8 November 2012.
- Wells Fargo, 8 November 2012.
- Bernstein, 9 November 2012.
- Guggenheim Securities, 9 November 2012.
- ISI Research, 9 November 2012.
- Macquarie Research, 9 November 2012.
- Sterne, Agee & Leach, Inc., 9 November 2012.
- Bernstein, 13 November 2012.
- ISI Research, 14 November 2012.
- Bernstein, 15 November 2012.
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- Bernstein, 16 November 2012.
- Goldman Sachs, 16 November 2012.
- Guggenheim Securities, 16 November 2012.
- Wells Fargo, 16 November 2012.
- Bernstein, 19 November 2012.
- Evercore, 19 November 2012.
- UBS, 19 November 2012.
- Barclays, 20 November 2012.
- Bernstein, 21 November 2012.
- Morgan Stanley, 21 November 2012.
- ISI Research, 26 November 2012.
- Bernstein, 27 November 2012.
- ISI Research, 27 November 2012.
- ISI Research, 29 November 2012.
- Bernstein, 30 November 2012.
- ISI Research, 2 December 2012.
- Oppenheimer, 3 December 2012.
- Evercore, 6 December 2012.
- Suntrust Robinson Humphrey, 6 December 2012.
- Wells Fargo, 6 December 2012.
- Bernstein, 7 December 2012.
- ISI Research, 7 December 2012.
- Barclays, 10 December 2012.
- Goldman Sachs, 10 December 2012.
- ISI Research, 10 December 2012.
- UBS, 10 December 2012.
- ISI Research, 11 December 2012.

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- Bernstein, 12 December 2012.
- ISI Research, 13 December 2012.
- ISI Research, 17 December 2012.
- Evercore, 18 December 2012.
- Bernstein, 19 December 2012.
- Evercore, 19 December 2012.
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- JPMorgan Chase & Co. Form DEF 14A, filed 31 March 2008.
- JPMorgan Chase & Co. Form 10-Q for the Quarter Ended 31 March 2008, filed 12 May 2008.
- JPMorgan Chase & Co. Form DEFA14A, filed 13 May 2008.
- JPMorgan Chase & Co. Form 11-K for the Fiscal Year Ended 31 December 2007, filed 27 June 2008.
- JPMorgan Chase & Co. Form 10-Q for the Quarter Ended 30 June 2008, filed 11 August 2008.
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Documents and Other Information Considered

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- JPMorgan Chase & Co. Form 10-K for the Fiscal Year Ended 31 December 2009, filed 24 February 2010.
- JPMorgan Chase & Co. Form PRE 14A, filed 19 March 2010.
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- JPMorgan Chase & Co. Form 11-K for the Fiscal Year Ended 31 December 2010, filed 28 June 2011.
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- JPMorgan Chase & Co. Form 8-K, filed 24 August 2011.
- JPMorgan Chase & Co. Form 8-K, filed 13 September 2011.
- JPMorgan Chase & Co. Form 8-K, filed 26 September 2011.
- JPMorgan Chase & Co. Form 8-K, filed 30 September 2011.
- JPMorgan Chase & Co. Form 8-K, filed 13 October 2011.

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- JPMorgan Chase & Co. Form 8-K, filed 4 November 2011.
- JPMorgan Chase & Co. Form 8-K, filed 4 November 2011.
- JPMorgan Chase & Co. Form 8-K, filed 8 November 2011.
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- JPMorgan Chase & Co. Form 8-K, filed 8 December 2011.
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- JPMorgan Chase & Co. Form 8-K, filed 22 December 2011.
- JPMorgan Chase & Co. Form 8-K, filed 13 January 2012.
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CONFERENCE CALL TRANSCRIPTS

- “JPMorgan Chase & Co. Current Trends in Marketing and Lead Generation in Higher Ed Conference Call,” *Thomson Reuters StreetEvents*, 5 January 2011.
- “Q4 2010 JPMorgan Chase & Co. Earnings Conference Call,” *Thomson Reuters StreetEvents*, 14 January 2011.
- “Q1 2011 JPMorgan Chase & Co Earnings Conference Call,” *Thomson Reuters StreetEvents*, 13 April 2011.
- “JPMorgan Chase & Co at Sanford C. Bernstein & Co. Strategic Decisions Conference,” *Thomson Reuters StreetEvents*, 2 June 2011.
- “Q2 2011 JPMorgan Chase & Co Earnings Conference Call,” *Thomson Reuters StreetEvents*, 14 July 2011.
- “JPMorgan Chase & Co at Barclays Capital Global Financial Services Conference,” *Thomson Reuters StreetEvents*, 13 September 2011.
- “Q3 2011 JPMorgan Chase & Co Earnings Conference Call,” *Thomson Reuters StreetEvents*, 13 October 2011.
- “JPMorgan Chase & Co at Banc Analysts Association of Boston Conference,” *Thomson Reuters StreetEvents*, 4 November 2011.
- “JPMorgan Chase & Co at Goldman Sachs US Financial Services Conference,” *Thomson Reuters StreetEvents*, 7 December 2011.
- “JPM - Q4 2011 JPMorgan Chase & Co. Earnings Conference Call,” *Thomson Reuters StreetEvents*, 13 January 2012.
- “JPM - J.P. Morgan European Pharma Pipeline Series "Merck KGaA: Stimuvax in Non Small Cell Lung Cancer",” *Thomson Reuters StreetEvents*, 3 April 2012.
- “JPM - Q1 2012 JPMorgan Chase & Co. Earnings Conference Call,” *Thomson Reuters StreetEvents*, 13 April 2012.
- “JPMorgan Chase & Co. at UBS Global Financial Services Conference,” *Thomson Reuters StreetEvents*, 8 May 2012.
- “JPM - JPMorgan Chase & Co. Corporate Conference Call,” *Thomson Reuters StreetEvents*, 10 May 2012.
- “JPMorgan Chase & Co. at Deutsche Bank Global Financial Services Investors Conference,” *Thomson Reuters StreetEvents*, 21 May 2012.
- “Q2 2012 JPMorgan Chase & Co. Earnings Conference Call,” *Thomson Reuters StreetEvents*, 13 July 2012.
- “A Conversation with Verizon Chairman and CEO Lowell McAdam hosted by J. P. Morgan,” *Thomson Reuters StreetEvents*, 7 September 2012.

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Documents and Other Information Considered

- “JPMorgan Chase & Co. at Barclays Capital Global Financial Services Conference,” *Thomson Reuters StreetEvents*, 11 September 2012.

DATA AND DATABASES

- Bloomberg
- Capital IQ
- CRSP (Center for Research in Security Prices)
- Factiva
- Thomson Financial
- Vickers

LEGAL CASES

- *Basic, Inc. v. Levinson*, 485 U.S. (1988).
- *Cammer v. Bloom*, 711 F. Supp. 1264 (N.J., 1989).
- *Halliburton Co. Et Al. v. Erica P. John Fund, Inc., FKA Archdiocese of Milwaukee Supporting Fund, Inc.*, 573 U. S. 10 (2014).
- *Krogman v. Sterritt*, 202 F.R.D. 467 (N.D.Tex. 2001)
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OTHER

- “Dow Jones Industrial Average: Historical Components,” *S&P Dow Jones Indices*, McGraw Hill Financial, September 2013.
- “Dow Jones Industrial Average: Overview,” <https://www.djaverages.com/?go=industrial-overview>, accessed on 25 September 2014.
- “Float Adjustment Methodology,” *S&P Dow Jones Indices*, July 2012.
- “Fact Sheet; Designated Market Makers,” NYSE Euronext, 2012.
- “Nasdaq To Enable Customers To Trade NYSE Stocks,” *Reuters*, 28 March 2005.
- Any other documents and data cited in the report.

Exhibit-2
Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

Babson College
Finance Division
Babson Park, MA 02457
781-239-5275
Feinstein@Babson.edu

EDUCATION

- 1989 YALE UNIVERSITY
Ph.D. in Economics (Concentration in Finance)
- 1986 YALE UNIVERSITY
M.Phil. in Economics
- 1983 YALE UNIVERSITY
M.A. in Economics
- 1981 POMONA COLLEGE
B.A. in Economics (Phi Beta Kappa, *cum laude*)

TEACHING EXPERIENCE

- 1996 - present BABSON COLLEGE
Babson Park, MA
Full-time Faculty, Finance Division
Associate Professor (2000-present)
Donald P. Babson Chair in Applied Investments (2002-2010)
Faculty Director of the Babson College Fund (2002-2009)
Director of the Stephen D. Cutler Investment Management Center
(2002-2007)
Assistant Professor (1996-2000)
- 1990 - 1995 BOSTON UNIVERSITY SCHOOL OF MANAGEMENT
Boston, MA
Full-time Faculty, Department of Finance
- 1993 - 1994 WASHINGTON UNIVERSITY, OLIN SCHOOL OF BUSINESS
St. Louis, MO
Visiting Assistant Professor, Department of Finance

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Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

BUSINESS EXPERIENCE

2008 - present	CROWNINSHIELD FINANCIAL RESEARCH, INC. Wellesley, MA President and Senior Expert
1996 - 2008	THE MICHEL-SHAKED GROUP Boston, MA Senior Expert (2001 - 2008) Affiliated Expert (1996 - 2001)
1987 - 1990	FEDERAL RESERVE BANK OF ATLANTA Economist

PROFESSIONAL DESIGNATIONS

1998 Awarded the Chartered Financial Analyst designation by the Association for Investment Management and Research.

RESEARCH AWARDS

1999 Greater Boston Real Estate Board/Real Estate Finance Association – Research Grant and Featured Speaker at Real Estate Finance Association Meetings.

PAPERS AND PUBLICATIONS

“Underestimation of Securities Fraud Aggregate Damages Due to Inter-Fund Trades.” (with Gang Hu, Mark Marcus, and Zann Ali) *Journal of Forensic Economics*, September 2013, Vol. 24, No. 2, 161-173.

“Lehman Equity Research Tipping: Evidence in the Stock Price Data,” Working paper, March 2010. Cited in *New York Times* May 19, 2012, and made available on the *New York Times* website.

“Distortion in Corporate Valuation: Implications of Capital Structure Changes” (with Allen Michel and Jacob Oded) *Managerial Finance*, 2011, Vol. 37(8), 681-696.

“Market Signals of Investment Unsuitability” (with Alexander Liss and Steven Achatz) Law360.com, June 3, 2010. Available from <http://www.law360.com/articles/170690>.

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Steven P. Feinstein, Ph.D., CFA

“Planning Capital Expenditure,” in *The Portable MBA in Financing and Accounting*, J. L. Livingstone and T. Grossman, editors, New York: Wiley, 3rd edition 2001, and 4th edition 2009.

“Financial Management of Risks,” in *The Portable MBA in Financing and Accounting*, J. L. Livingstone and T. Grossman, editors, New York: Wiley, 2nd edition 1997, 3rd edition 2001, and 4th edition 2009.

“Fraud-on-the-Market Theory: Is a Market Efficient?” (with Allen Michel and Israel Shaked) *American Bankruptcy Institute Journal*, May 2005.

“Valuation of Credit Guarantees” (with Allen J. Michel and Israel Shaked). *Journal of Forensic Economics* 17(1), pp. 17-37, 2005.

“A Better Understanding of why NPV Undervalues Managerial Flexibility,” (with Diane Lander) in *The Engineering Economist*, 2002, Volume 47, Number 4.

“Teaching the Strong-Form Efficient Market Hypothesis: A Classroom Experiment,” *Journal of Financial Education*, fall 2000.

A Future for Real Estate Futures: Potential Applications of Derivatives in Real Estate Investment and Finance (with Linda Stoller). Monograph. Boston: Real Estate Finance Association / Greater Boston Real Estate Board, May 2000.

“The Risk Budget: Using Your Human Resources,” (with John Marthinsen and John Edmunds) *Risk Management*, April 2000.

“Scenario Learning: A Powerful Tool for the 21st Century Planner,” (with Jeffrey Ellis and Dennis Stearns) *The Journal of Financial Planning*, April 2000.

“Protecting Future Product Liability Claimants in the Case of Bankruptcy,” (with Allen Michel and Israel Shaked) *American Bankruptcy Institute Journal*, January 2000.

“Measuring Risk with the Bodie Put When Stocks Exhibit Mean Reversion,” *The Journal of Risk*, Vol. 1, No. 3, 1999.

“Just-in-Time Mathematics: Integrating the Teaching of Finance Theory and Mathematics,” (with Gordon Prichett) *Primus*, Vol. IX, No. 2, June 1999.

Atlanta Park Medical Center v. Hamlin Asset Management. (with Natalie Taylor). Babson Case Collection, Harvard Business School Press, 1998.

“Dealing with Delta,” *Derivatives Week*, VII, No. 44, November 2, 1998.

Exhibit-2
Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

“Expected Return in Option Pricing: A Non-Mathematical Explanation,” *Derivatives Week*, VII, No. 35, August 31, 1998.

“When Hedges Fail: The Put Paradox and its Solution,” *Derivatives Quarterly*, Vol. 4, No. 2, Winter 1997.

Finance and Accounting for Project Management. New York: American Management Association, 1996.

“International Investing,” in *Irwin’s Directory of Emerging Market Brokerages*. New York: Irwin, 1996.

“The Hull and White Implied Volatility.” Boston University Working Paper #92-51, 1992.

“Immunizing Against Interest Rate Risk Using the Macaulay Duration Statistic: An Assessment,” (with Don Smith) in *Financial Systems and Risk Management*, the proceedings of the US-Japan Forum on Financial Strategy in the 1990s, sponsored by Osaka Foundation of International Exchange and Boston University, August 1991.

“Covered Call Options: A Proposal to Ease LDC Debt,” (with Peter Abken) *Federal Reserve Bank of Atlanta Economic Review*, March/April 1990. Reprinted in *Financial Derivatives: New Instruments and Their Uses*. Atlanta: Federal Reserve Bank.

“Forecasting Stock-Market Volatility Using Options on Index Futures,” *Federal Reserve Bank of Atlanta Economic Review*, May/June 1989. Reprinted in *Financial Derivatives: New Instruments and Their Uses*. Atlanta: Federal Reserve Bank.

“The Black-Scholes Formula is Nearly Linear in Sigma for At-the-Money Options; Therefore Implied Volatilities from At-the-Money Options are Virtually Unbiased.” Federal Reserve Bank of Atlanta Working Paper #88-9, December 1988.

“The Effect of the ‘Triple Witching Hour’ on Stock Market Volatility,” (with William Goetzmann) *Federal Reserve Bank of Atlanta Economic Review*, September/October 1988. Reprinted in *Financial Derivatives: New Instruments and Their Uses*. Atlanta: Federal Reserve Bank.

“Stock Market Volatility,” *Federal Reserve Bank of Atlanta Economic Review*, November/December 1987.

Book review of *In Who’s Interest: International Banking and American Foreign Policy*, by Benjamin J. Cohen, Yale University Press, in *Federal Reserve Bank Of Atlanta Economic Review*, Summer 1987.

Exhibit-2
Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

PRESENTATIONS

“Determining the Defendant's Ability to Pay,” at Taxpayers Against Fraud Education Fund Conference, October 2010.

“The Computation of Damages in Securities Fraud Cases,” at the Grant and Eisenhower Institutional Investor Conference, December 2002.

“The Role of the Financial Expert in Complex Litigation,” at the Financial Management Association Conference, October 2000.

“Entrepreneurial Incentives and Resource Allocation Among Corporate Venturing Initiatives,” (with Joel Shulman and U. Srinivasa Rangan), Babson Entrepreneurship Research Conference, May 2000.

“Application of Real Options in Purchasing Strategies,” (with Juan Orozco), presented at the International Applied Business Research Conference, March 2000.

“A Future for Real Estate Futures,” (with Linda Stoller) at the Fairfield County chapter of the Real Estate Finance Association, November 1999, and at the Greater Boston Real Estate Board, November 2000.

“Atlanta Park Medical Center v. Hamlin Asset Management,” (with Natalie Taylor) at the 1999 convention of the North American Case Research Association.

“Using Future Worlds™ in the Financial Planning Process,” (with Jeffrey Ellis) at the Institute of Certified Financial Planners Masters Retreat, October 1999.

“Toward a Better Understanding of Real Options: A Weighted Average Discount Rate Approach,” at the 1999 Financial Management Association Conference, the 1999 European Financial Management Association Conference, and the 1999 Multinational Finance Society Conference.

“Just-In-Time Mathematics: Integrating the Teaching of Finance Theory and Mathematics,” (with Gordon Prichett) at the 1999 Financial Management Association Conference.

“Alternative Dow Investments for the Individual Investor: Diamonds, Synthetics, and the Real Thing,” at the 1999 Academy of Financial Services Convention.

“Evidence of Yield Burning in Municipal Refundings” at Financial Management Association Convention, October 1997; Government Finance Officers Association, 1997; and Northeast Regional Convention of the National Association of State Treasurers, 1997.

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Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

“Teaching the Strong-Form Efficient Market Hypothesis” at Conference on Classroom Experiments in the Teaching of Economics at University of Virginia, September 1995.

“Efficient Consolidation of Implied Standard Deviations,” (with Shaikh Hamid) at Midwest Finance Association, March 1995.

“A Test of Intertemporal Averaging of Implied Volatilities,” (with Shaikh Hamid) at Eastern Finance Association, April 1995.

“Taking Advantage of Volatility: Non-linear Forecasting and Options Strategies,” (with Hassan Ahmed) at Chicago Board of Trade / Chicago Board Options Exchange Conference on Risk Management, February 1992.

“Immunizing Against Interest Rate Risk Using the Macaulay Duration Statistic: An Assessment,” (with Don Smith) at Japan-U.S. Conference on Financial Strategies in the 1990s, Osaka, Japan, August 1991.

“The Hull and White Implied Volatility,” at American Finance Association Convention, December 1990.

REVIEWED ARTICLES AND BOOKS FOR:

Harvard Business School Publishing
Elsevier
Journal of Economic Education
Journal of Forensic Economics
Journal of Risk
Financial Review
North American Case Research Association
Financial Management
Journal of Business
Journal of Money, Credit and Banking
Quarterly Review of Economics and Finance
Blackwell
Prentice Hall
Southwestern Publishing

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Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

COURSES TAUGHT

Capital Markets
Mod B: Decision Making and Applications, Finance stream (MBA)
Financial Reporting and Corporate Finance (MBA)
Valuation (MBA)
Investments (MBA and Executive)
Equity Markets (MBA)
Fixed Income Analysis (Undergraduate and MBA)
Babson College Fund (Undergraduate and MBA)
Options and Futures (Undergraduate)
Advanced Derivative Securities (MBA)
Corporate Finance (MBA and Executive)
Financial Management (MBA)
Risk Management (MBA)
Corporate Financial Strategy (MBA)
Integrated Management (Undergraduate)
Cross-Functional Management (Integrated curriculum, Undergraduate)
Continuous-Time Finance (Doctoral)
Portfolio Theory / Management Information Systems (Executive)
Quantitative Methods for Investment Management (Undergraduate and MBA)
Introduction to Derivative Securities (Executive)
International Finance (Executive)

TEACHING AWARDS

Reid Teaching Award, Washington University, Olin School of Business, 1993-94.

SELECT LIST OF MEDIA CITATIONS

“Is Insider Trading Part of the Fabric?” by Gretchen Morgenson, *The New York Times*, May 19, 2012.

“Bankers Rigging Municipal Contract Bids Admit to Cover-Up Lies,” by William Selway and Martin Z. Braun, *Bloomberg Markets Magazine*, November 24, 2010.

“Hospital Move Presents Buy-Out Groups with New Risks,” by Francesco Guerra, Christopher Bowe, and Rebecca Knight, *Financial Times*, July 15, 2006.

“Funds of Knowledge Add Value,” by Rebecca Knight, *Financial Times*, March 12, 2006.

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Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

“City’s Financial Picture Worse Than Ever, Sanders Says,” by Matthew T. Hall, *San Diego Union-Tribune*, January 7, 2006.

“Downer: Stock Market Takes Another Dive,” by John Chesto, *Boston Herald*, July 23, 2002.

“Banks, Developers, Are Main Beneficiaries,” [editorial column] by Steven Feinstein, *The Boston Globe*, March 31, 2002, p. C4.

“Washington Investing: What Michael Saylor is Really Worth,” by Jerry Knight, *The Washington Post*, March 6, 2000.

“IBM Retools Pensions,” by Stephanie Armour, *USA Today*, May 4, 1999.

“L.A. MTA’s Law Firm Says Lissack Strategy Will be a Replay,” by Andrea Figler, *Bond Buyer*, September 30, 1998.

“Fed Key Player in Rescue of Floundering Hedge Fund,” by Andrew Fraser, Associated Press, September 25, 1998.

“Top Banks Plan Bailout for Fund,” by Andrew Fraser, Associated Press, September 24, 1998.

“Clarion Call to the Small Investor,” by Jo-Ann Johnston, *The Boston Globe*, March 4, 1998.

“L.A. Authority Study Shows Rampant Yield Burning Abuse,” by Michael Stanton, *The Bond Buyer*, April 22, 1997.

“Dispute Over Yield Burning Dominates GFOA Session,” by Michael Stanton, *The Bond Buyer*, January 29, 1997.

“Men Behaving Badly (Yield Burning),” *Grants Municipal Bond Observer*, January 24, 1997.

“Municipal Bond Dealers Face Scrutiny,” by Peter Truell, *The New York Times*, December 17, 1996.

“Iowa Market Takes Stock of Presidential Candidates,” by Stanley W. Angrist, *The Wall Street Journal*, August 28, 1995.

“Looking for Clues in Options Prices,” by Sylvia Nasar, *The New York Times*, July 18, 1991.

Exhibit-2
Curriculum Vitae
Steven P. Feinstein, Ph.D., CFA

“For Fed, A New Set of Tea Leaves,” by Sylvia Nasar, *The New York Times*, July 5, 1991.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Finance Association
Boston Security Analysts Society
Chartered Financial Analyst Institute
Financial Management Association
Foundation for Advancement of Research in Financial Economics (founding member)
National Association of Forensic Economics
North American Case Research Association

Exhibit-3
Steven P. Feinstein, Ph.D., CFA
Testimony in the Last Four Years

The Board of Trustees of the Southern California IBEW-NECA Defined Contribution Plan, vs.
The Bank of New York Mellon Corporation and BNY Mellon, National Association.
United States District Court
Southern District of New York
Civil Action No. 1:09-cv-06273-RMB-AJP
Deposition Testimony
March 2011 and May 2011

In Re Merck & Co., Inc. Securities, Derivative & “ERISA” Litigation
United States District Court
District of New Jersey
Civil Action No. 05-2369(SRC)
Deposition Testimony
May 2011

In Re Constar International Inc. Securities Litigation
United States District Court
Eastern District of Pennsylvania
Civil Action No. 2:03-cv-05020-EL
Deposition Testimony
June 2011

Alaska Electrical Pension Fund, *et al.*, vs. Pharmacia Corporation, *et al.*
United States District Court
District of New Jersey
Civil Action No. 3:09-1519 (AET)
Deposition Testimony
October 2011

Mary K. Jones, *et al.*, vs. Pfizer Inc., *et al.*
United States District Court
Southern District of New York
Civil Action no. 10-CV-03864-AKH
Deposition Testimony
January 2012

State of New Jersey, Department of Treasury, Division of Investment on behalf of Common
Pension Fund A, vs. Merrill Lynch & Co., and Bank of America Corporation
Docket No. L-3855-09
Superior Court of New Jersey
Law Division
Hudson County
Deposition Testimony
June 2012

Exhibit-3
Steven P. Feinstein, Ph.D., CFA
Testimony in the Last Four Years

Jan Buetting, *et al.* vs. Katherine J. Harless, *et al.*
United States District Court
Northern District of Texas
Dallas Division
Civil Action No. 3:09-cv-00791-K
Deposition Testimony
December 2010 and August 2012

DJ Mortgage, LLC, and John F. Smithgall vs. Synovus Bank d/b/a Bank of North Georgia
Superior Court for the County of Fulton
State of Georgia
Civil Action no. 11-cv-205000
Deposition Testimony
September 2012

Carlos Munoz, *et al.* vs. China Expert Technology, Inc.; PKF New York, Certified Public Accountants, A Professional Corporation; PKF Hong Kong, Certified Public Accountants; And BDO McCade Lo Limited Certified Public Accountants
United States District Court
Southern District of New York
Civil Action no. 07-cv-10531 (AKH)
Deposition Testimony
March 2013

In Re American International Group, Inc. 2008 Securities Litigation
United States District Court
Southern District of New York
Civil Action no. 08-CV-4772-LTS
Deposition Testimony
July 2011 and February 2012
Testimony at Evidentiary Hearing
April 2013 and May 2013

Christopher Cohan, *et al.*, vs. KPMG LLP
Court of Fulton County
State of Georgia
Civil Action no. 12EV0114325G
June 2013

Exhibit-3
Steven P. Feinstein, Ph.D., CFA
Testimony in the Last Four Years

Landmen Partners Inc. *et al.* vs. The Blackstone Group L.P., *et al.*
United States District Court
Southern District of New York
Civil Action no. 08-cv-03601-HB
Deposition Testimony
May 2013 and August 2013

Louis Pagnotti, Inc. *et al.*, vs. Deloitte & Touche, LLP,
In the Court of Common Pleas of Luzerne County
Case No. 557 C of 2003
Deposition Testimony
October 2013

In Re IndyMac Mortgage-Backed Securities Litigation
Civil Action No. 1:09-cv-04583-LAK
United States District Court
Southern District of New York
Deposition Testimony
January 2011 and October 2013

In Re Walter Energy, Inc. Securities Litigation
Civil Action No. 2:12-cv-00281-VEH
United States District Court
Northern District of Alabama
Deposition Testimony
January 2014

Anwar, *et al.*, v. Fairfield Greenwich Limited, *et al.*
Civil Action No. 09-cv-0118 (VM)
United States District Court
Southern District of New York
Deposition Testimony
February 2014

In Re Symbol Technologies, Inc. Securities Litigation
Civil Action No. 05-cv-3923-DRH
United States District Court
Eastern District of New York
Deposition Testimony
June 2014

Exhibit-3
Steven P. Feinstein, Ph.D., CFA
Testimony in the Last Four Years

In Re Groupon, Inc. Securities Litigation
Civil Action No. 12-cv-2450
United States District Court
Northern District of Illinois
Deposition Testimony
February 2014
Testimony at Evidentiary Hearing
September 2014

Mary K. Jones, *et al.*, vs. Pfizer Inc., *et al.*
United States District Court
Southern District of New York
Civil Action no. 10-cv-03864-AKH
Deposition Testimony
January 2012 and October 2014

In Re Questcor Pharmaceuticals, Inc. Securities Litigation
Civil Action No. 12-cv-01623-DMG
United States District Court
Central District of California
Deposition Testimony
October 2014

In Re Baxter International Inc., Securities Litigation
Civil Action No. 1:10-cv-06016
United States District Court
Northern District of Illinois
Eastern Division
Deposition Testimony
November 2014

In Re Longtop Financial Technologies, Ltd. Securities Litigation
Civil Action No. 11-cv-3658-SAS
United States District Court
Southern District of New York
Trial Testimony
November 2014

In Re Delcath Systems, Inc. Securities Litigation
Civil Action No. 13 Civ. 3116 (LGS)
United States District Court
Southern District of New York
Deposition Testimony
December 2014

Exhibit-3
Steven P. Feinstein, Ph.D., CFA
Testimony in the Last Four Years

In Re Prudential Financial, Inc. Securities Litigation
Civil Action No. 2:12-cv-05275-SDW-MCA
United States District Court
District of New Jersey
Deposition Testimony
January 2015

Exhibit-4**JPMorgan Chase & Co. (JPM) Stock Prices, Dividends, Volume, and Returns**

20 May 2011 through 21 May 2012

Date	JPM Closing Price	JPM Dividends	JPM Bid	JPM Ask	JPM Trading Volume	JPM Logarithmic Return
5/20/2011	\$43.13	—	\$43.13	\$43.14	29,951,500	
5/23/2011	\$42.55	—	\$42.55	\$42.56	32,316,800	-1.35%
5/24/2011	\$42.34	—	\$42.33	\$42.34	39,341,300	-0.49%
5/25/2011	\$42.27	—	\$42.27	\$42.28	26,510,100	-0.17%
5/26/2011	\$42.45	—	\$42.47	\$42.48	21,660,700	0.42%
5/27/2011	\$42.79	—	\$42.78	\$42.79	24,748,700	0.80%
5/31/2011	\$43.24	—	\$43.22	\$43.23	28,746,200	1.05%
6/1/2011	\$41.76	—	\$41.75	\$41.76	38,634,800	-3.48%
6/2/2011	\$41.61	—	\$41.61	\$41.61	45,969,400	-0.36%
6/3/2011	\$41.57	—	\$41.57	\$41.58	31,837,500	-0.10%
6/6/2011	\$40.53	—	\$40.54	\$40.55	40,895,900	-2.53%
6/7/2011	\$40.72	—	\$40.66	\$40.67	36,342,400	0.47%
6/8/2011	\$40.39	—	\$40.39	\$40.40	38,895,200	-0.81%
6/9/2011	\$40.98	—	\$41.00	\$41.00	30,084,300	1.45%
6/10/2011	\$41.05	—	\$41.05	\$41.06	48,547,100	0.17%
6/13/2011	\$41.67	—	\$41.69	\$41.70	31,768,300	1.50%
6/14/2011	\$41.61	—	\$41.60	\$41.61	32,110,100	-0.16%
6/15/2011	\$40.68	—	\$40.68	\$40.69	37,337,300	-2.25%
6/16/2011	\$40.36	—	\$40.35	\$40.36	50,321,100	-0.79%
6/17/2011	\$40.80	—	\$40.77	\$40.78	32,024,000	1.08%
6/20/2011	\$40.48	—	\$40.45	\$40.46	21,568,800	-0.79%
6/21/2011	\$40.91	—	\$40.91	\$40.92	34,244,100	1.06%
6/22/2011	\$40.69	—	\$40.69	\$40.70	27,317,100	-0.54%
6/23/2011	\$40.07	—	\$40.08	\$40.09	48,316,500	-1.54%
6/24/2011	\$39.49	—	\$39.50	\$39.51	36,143,000	-1.46%
6/27/2011	\$39.88	—	\$39.88	\$39.89	30,639,600	0.98%
6/28/2011	\$39.54	—	\$39.53	\$39.54	41,558,700	-0.86%
6/29/2011	\$40.45	—	\$40.47	\$40.48	44,783,500	2.28%
6/30/2011	\$40.94	—	\$40.91	\$40.92	28,002,000	1.20%
7/1/2011	\$41.58	\$0.25	\$41.58	\$41.59	32,136,700	2.15%
7/5/2011	\$41.03	—	\$41.03	\$41.04	23,811,200	-1.33%
7/6/2011	\$40.56	—	\$40.56	\$40.57	23,868,300	-1.15%
7/7/2011	\$41.32	—	\$41.32	\$41.33	28,554,300	1.86%
7/8/2011	\$40.74	—	\$40.74	\$40.75	20,683,000	-1.41%
7/11/2011	\$39.43	—	\$39.44	\$39.45	38,327,900	-3.27%
7/12/2011	\$39.39	—	\$39.40	\$39.41	33,808,200	-0.10%
7/13/2011	\$39.62	—	\$39.63	\$39.64	34,020,600	0.58%
7/14/2011	\$40.35	—	\$40.35	\$40.36	65,336,300	1.83%
7/15/2011	\$39.98	—	\$39.99	\$40.00	46,553,300	-0.92%
7/18/2011	\$39.83	—	\$39.83	\$39.84	47,604,200	-0.38%
7/19/2011	\$40.39	—	\$40.37	\$40.38	34,844,500	1.40%
7/20/2011	\$40.96	—	\$40.95	\$40.96	31,250,800	1.40%
7/21/2011	\$42.29	—	\$42.29	\$42.30	45,554,100	3.20%
7/22/2011	\$42.19	—	\$42.16	\$42.17	19,986,000	-0.24%
7/25/2011	\$41.69	—	\$41.68	\$41.69	22,531,000	-1.19%
7/26/2011	\$41.44	—	\$41.46	\$41.47	24,354,900	-0.60%
7/27/2011	\$40.67	—	\$40.67	\$40.68	32,364,600	-1.88%

Exhibit-4**JPMorgan Chase & Co. (JPM) Stock Prices, Dividends, Volume, and Returns**

20 May 2011 through 21 May 2012

Date	JPM Closing Price	JPM Dividends	JPM Bid	JPM Ask	JPM Trading Volume	JPM Logarithmic Return
7/28/2011	\$40.68	—	\$40.69	\$40.70	23,370,800	0.02%
7/29/2011	\$40.45	—	\$40.42	\$40.43	37,796,000	-0.57%
8/1/2011	\$40.44	—	\$40.43	\$40.44	34,042,400	-0.02%
8/2/2011	\$39.84	—	\$39.84	\$39.85	42,118,900	-1.49%
8/3/2011	\$39.90	—	\$39.90	\$39.91	41,110,000	0.15%
8/4/2011	\$37.92	—	\$37.88	\$37.89	59,938,100	-5.09%
8/5/2011	\$37.60	—	\$37.60	\$37.61	85,512,200	-0.85%
8/8/2011	\$34.06	—	\$34.12	\$34.13	107,650,300	-9.89%
8/9/2011	\$36.40	—	\$36.39	\$36.40	78,985,600	6.64%
8/10/2011	\$34.37	—	\$34.32	\$34.33	83,975,600	-5.74%
8/11/2011	\$36.69	—	\$36.61	\$36.62	69,583,400	6.53%
8/12/2011	\$35.91	—	\$35.93	\$35.94	44,082,500	-2.15%
8/15/2011	\$36.88	—	\$36.87	\$36.88	34,830,100	2.67%
8/16/2011	\$36.03	—	\$36.02	\$36.03	42,272,600	-2.33%
8/17/2011	\$36.57	—	\$36.59	\$36.60	30,131,300	1.49%
8/18/2011	\$35.19	—	\$35.19	\$35.20	57,139,200	-3.85%
8/19/2011	\$34.35	—	\$34.36	\$34.37	52,962,300	-2.42%
8/22/2011	\$33.41	—	\$33.42	\$33.43	50,971,300	-2.77%
8/23/2011	\$34.78	—	\$34.77	\$34.78	55,809,400	4.02%
8/24/2011	\$35.83	—	\$35.81	\$35.82	41,963,800	2.97%
8/25/2011	\$35.72	—	\$35.73	\$35.74	55,387,600	-0.31%
8/26/2011	\$36.21	—	\$36.18	\$36.19	35,115,700	1.36%
8/29/2011	\$37.64	—	\$37.61	\$37.62	27,945,800	3.87%
8/30/2011	\$37.06	—	\$37.06	\$37.07	28,826,300	-1.55%
8/31/2011	\$37.56	—	\$37.55	\$37.55	30,051,400	1.34%
9/1/2011	\$36.30	—	\$36.34	\$36.35	36,865,300	-3.41%
9/2/2011	\$34.63	—	\$34.63	\$34.64	41,677,200	-4.71%
9/6/2011	\$33.44	—	\$33.45	\$33.46	57,081,200	-3.50%
9/7/2011	\$34.82	—	\$34.80	\$34.81	36,145,900	4.04%
9/8/2011	\$33.51	—	\$33.52	\$33.53	44,815,200	-3.83%
9/9/2011	\$32.08	—	\$32.07	\$32.08	67,195,600	-4.36%
9/12/2011	\$32.42	—	\$32.41	\$32.42	53,381,700	1.05%
9/13/2011	\$32.49	—	\$32.49	\$32.50	50,142,200	0.22%
9/14/2011	\$32.80	—	\$32.77	\$32.78	44,446,700	0.95%
9/15/2011	\$33.81	—	\$33.80	\$33.81	35,848,800	3.03%
9/16/2011	\$33.43	—	\$33.46	\$33.47	52,687,600	-1.13%
9/19/2011	\$32.49	—	\$32.49	\$32.50	33,160,200	-2.85%
9/20/2011	\$32.25	—	\$32.26	\$32.27	34,089,400	-0.74%
9/21/2011	\$30.34	—	\$30.28	\$30.29	57,429,600	-6.11%
9/22/2011	\$29.27	—	\$29.26	\$29.27	86,290,400	-3.59%
9/23/2011	\$29.59	—	\$29.57	\$29.57	51,731,300	1.09%
9/26/2011	\$31.65	—	\$31.67	\$31.68	58,696,000	6.73%
9/27/2011	\$31.57	—	\$31.56	\$31.57	58,242,800	-0.25%
9/28/2011	\$30.47	—	\$30.48	\$30.49	38,725,800	-3.55%
9/29/2011	\$31.39	—	\$31.35	\$31.37	51,015,800	2.97%
9/30/2011	\$30.12	—	\$30.13	\$30.14	42,436,900	-4.13%
10/3/2011	\$28.65	—	\$28.64	\$28.65	51,002,700	-5.00%

Exhibit-4**JPMorgan Chase & Co. (JPM) Stock Prices, Dividends, Volume, and Returns**

20 May 2011 through 21 May 2012

Date	JPM Closing Price	JPM Dividends	JPM Bid	JPM Ask	JPM Trading Volume	JPM Logarithmic Return
10/4/2011	\$30.26	\$0.25	\$30.20	\$30.21	69,815,400	6.29%
10/5/2011	\$30.84	—	\$30.83	\$30.84	51,117,100	1.90%
10/6/2011	\$32.38	—	\$32.35	\$32.36	53,216,600	4.87%
10/7/2011	\$30.70	—	\$30.71	\$30.72	49,326,200	-5.33%
10/10/2011	\$32.30	—	\$32.30	\$32.31	37,324,700	5.08%
10/11/2011	\$32.30	—	\$32.30	\$32.31	38,169,200	0.00%
10/12/2011	\$33.20	—	\$33.21	\$33.22	55,462,500	2.75%
10/13/2011	\$31.60	—	\$31.58	\$31.59	78,838,200	-4.94%
10/14/2011	\$31.89	—	\$31.89	\$31.90	51,905,100	0.91%
10/17/2011	\$31.04	—	\$31.05	\$31.06	40,869,700	-2.70%
10/18/2011	\$32.87	—	\$32.84	\$32.86	64,392,300	5.73%
10/19/2011	\$32.25	—	\$32.24	\$32.25	50,121,900	-1.90%
10/20/2011	\$33.13	—	\$33.06	\$33.07	41,662,500	2.69%
10/21/2011	\$33.42	—	\$33.45	\$33.46	48,445,300	0.87%
10/24/2011	\$34.57	—	\$34.55	\$34.56	45,697,200	3.38%
10/25/2011	\$33.49	—	\$33.52	\$33.53	38,683,500	-3.17%
10/26/2011	\$34.18	—	\$34.19	\$34.20	36,360,800	2.04%
10/27/2011	\$37.02	—	\$37.00	\$37.01	76,226,600	7.98%
10/28/2011	\$36.69	—	\$36.69	\$36.70	39,893,800	-0.90%
10/31/2011	\$34.76	—	\$34.75	\$34.76	46,438,700	-5.40%
11/1/2011	\$32.71	—	\$32.73	\$32.74	74,056,200	-6.08%
11/2/2011	\$33.64	—	\$33.64	\$33.65	34,342,400	2.80%
11/3/2011	\$34.38	—	\$34.37	\$34.38	40,087,800	2.18%
11/4/2011	\$33.97	—	\$33.99	\$34.00	30,867,200	-1.20%
11/7/2011	\$34.24	—	\$34.24	\$34.25	25,935,500	0.79%
11/8/2011	\$35.02	—	\$35.03	\$35.04	30,195,000	2.25%
11/9/2011	\$32.54	—	\$32.56	\$32.57	53,000,000	-7.34%
11/10/2011	\$32.74	—	\$32.71	\$32.72	30,431,600	0.61%
11/11/2011	\$33.28	—	\$33.27	\$33.28	29,989,600	1.64%
11/14/2011	\$32.55	—	\$32.54	\$32.55	27,596,200	-2.22%
11/15/2011	\$32.70	—	\$32.71	\$32.72	31,266,000	0.46%
11/16/2011	\$31.47	—	\$31.49	\$31.50	40,761,700	-3.83%
11/17/2011	\$30.49	—	\$30.48	\$30.49	55,130,000	-3.16%
11/18/2011	\$30.62	—	\$30.61	\$30.62	39,033,900	0.43%
11/21/2011	\$29.91	—	\$29.91	\$29.92	39,666,400	-2.35%
11/22/2011	\$29.41	—	\$29.39	\$29.40	36,466,200	-1.69%
11/23/2011	\$28.38	—	\$28.39	\$28.40	44,474,400	-3.57%
11/25/2011	\$28.48	—	\$28.50	\$28.51	21,423,200	0.35%
11/28/2011	\$29.16	—	\$29.19	\$29.20	45,285,400	2.36%
11/29/2011	\$28.56	—	\$28.58	\$28.59	45,104,700	-2.08%
11/30/2011	\$30.97	—	\$30.93	\$30.94	61,412,500	8.10%
12/1/2011	\$30.46	—	\$30.46	\$30.47	33,189,700	-1.66%
12/2/2011	\$32.33	—	\$32.33	\$32.34	90,519,600	5.96%
12/5/2011	\$33.51	—	\$33.50	\$33.51	52,216,100	3.58%
12/6/2011	\$33.23	—	\$33.24	\$33.25	38,788,200	-0.84%
12/7/2011	\$34.00	—	\$34.02	\$34.03	44,722,800	2.29%
12/8/2011	\$32.22	—	\$32.25	\$32.26	47,788,900	-5.38%

Exhibit-4**JPMorgan Chase & Co. (JPM) Stock Prices, Dividends, Volume, and Returns**

20 May 2011 through 21 May 2012

Date	JPM Closing Price	JPM Dividends	JPM Bid	JPM Ask	JPM Trading Volume	JPM Logarithmic Return
12/9/2011	\$33.18	—	\$33.12	\$33.13	39,106,900	2.94%
12/12/2011	\$32.04	—	\$32.05	\$32.06	35,986,400	-3.50%
12/13/2011	\$31.29	—	\$31.28	\$31.29	49,484,800	-2.37%
12/14/2011	\$31.51	—	\$31.51	\$31.52	41,295,700	0.70%
12/15/2011	\$31.76	—	\$31.76	\$31.77	33,457,200	0.79%
12/16/2011	\$31.89	—	\$31.89	\$31.90	52,598,300	0.41%
12/19/2011	\$30.70	—	\$30.69	\$30.70	47,388,000	-3.80%
12/20/2011	\$32.21	—	\$32.21	\$32.22	49,092,900	4.80%
12/21/2011	\$32.32	—	\$32.31	\$32.32	30,899,000	0.34%
12/22/2011	\$33.45	—	\$33.45	\$33.46	35,544,900	3.44%
12/23/2011	\$33.57	—	\$33.56	\$33.57	21,962,700	0.36%
12/27/2011	\$33.03	—	\$33.04	\$33.05	16,897,100	-1.62%
12/28/2011	\$32.65	—	\$32.66	\$32.67	19,248,500	-1.16%
12/29/2011	\$33.42	—	\$33.40	\$33.41	19,793,000	2.33%
12/30/2011	\$33.25	—	\$33.24	\$33.25	18,199,600	-0.51%
1/3/2012	\$34.98	—	\$34.94	\$34.95	44,108,300	5.07%
1/4/2012	\$34.95	\$0.25	\$34.93	\$34.94	36,576,200	0.63%
1/5/2012	\$35.68	—	\$35.68	\$35.69	38,383,800	2.07%
1/6/2012	\$35.36	—	\$35.36	\$35.37	33,163,000	-0.90%
1/9/2012	\$35.30	—	\$35.27	\$35.28	23,006,500	-0.17%
1/10/2012	\$36.05	—	\$36.04	\$36.05	35,982,900	2.10%
1/11/2012	\$36.66	—	\$36.65	\$36.66	29,853,100	1.68%
1/12/2012	\$36.85	—	\$36.82	\$36.83	39,420,900	0.52%
1/13/2012	\$35.92	—	\$35.90	\$35.91	61,577,100	-2.56%
1/17/2012	\$34.91	—	\$34.89	\$34.90	55,119,000	-2.85%
1/18/2012	\$36.54	—	\$36.55	\$36.56	55,504,900	4.56%
1/19/2012	\$36.93	—	\$36.91	\$36.92	37,002,000	1.06%
1/20/2012	\$37.36	—	\$37.36	\$37.37	34,716,500	1.16%
1/23/2012	\$37.66	—	\$37.67	\$37.68	27,500,800	0.80%
1/24/2012	\$37.66	—	\$37.66	\$37.67	25,406,100	0.00%
1/25/2012	\$37.60	—	\$37.59	\$37.60	29,863,000	-0.16%
1/26/2012	\$37.49	—	\$37.49	\$37.50	33,291,200	-0.29%
1/27/2012	\$37.21	—	\$37.23	\$37.24	27,674,800	-0.75%
1/30/2012	\$37.01	—	\$37.02	\$37.03	24,432,100	-0.54%
1/31/2012	\$37.30	—	\$37.31	\$37.32	29,658,100	0.78%
2/1/2012	\$37.60	—	\$37.58	\$37.59	41,957,800	0.80%
2/2/2012	\$37.55	—	\$37.54	\$37.55	26,786,900	-0.13%
2/3/2012	\$38.28	—	\$38.27	\$38.28	41,081,300	1.93%
2/6/2012	\$38.14	—	\$38.14	\$38.15	23,108,300	-0.37%
2/7/2012	\$37.87	—	\$37.88	\$37.89	21,092,900	-0.71%
2/8/2012	\$38.30	—	\$38.29	\$38.30	23,258,700	1.13%
2/9/2012	\$37.86	—	\$37.86	\$37.87	28,614,500	-1.16%
2/10/2012	\$37.61	—	\$37.60	\$37.61	22,624,800	-0.66%
2/13/2012	\$38.30	—	\$38.30	\$38.31	24,828,000	1.82%
2/14/2012	\$37.92	—	\$37.92	\$37.93	27,039,300	-1.00%
2/15/2012	\$37.40	—	\$37.41	\$37.42	26,534,900	-1.38%
2/16/2012	\$38.00	—	\$37.98	\$37.99	22,141,400	1.59%

Exhibit-4**JPMorgan Chase & Co. (JPM) Stock Prices, Dividends, Volume, and Returns**

20 May 2011 through 21 May 2012

Date	JPM Closing Price	JPM Dividends	JPM Bid	JPM Ask	JPM Trading Volume	JPM Logarithmic Return
2/17/2012	\$38.47	—	\$38.48	\$38.48	28,016,300	1.23%
2/21/2012	\$38.46	—	\$38.47	\$38.48	22,807,500	-0.03%
2/22/2012	\$38.07	—	\$38.09	\$38.10	23,418,200	-1.02%
2/23/2012	\$38.49	—	\$38.48	\$38.49	31,363,500	1.10%
2/24/2012	\$38.28	—	\$38.28	\$38.29	17,589,400	-0.55%
2/27/2012	\$39.06	—	\$39.06	\$39.07	34,036,900	2.02%
2/28/2012	\$39.21	—	\$39.19	\$39.20	37,905,500	0.38%
2/29/2012	\$39.24	—	\$39.25	\$39.26	41,187,900	0.08%
3/1/2012	\$40.37	—	\$40.37	\$40.38	44,384,500	2.84%
3/2/2012	\$40.63	—	\$40.63	\$40.64	34,897,800	0.64%
3/5/2012	\$40.40	—	\$40.38	\$40.39	30,806,800	-0.57%
3/6/2012	\$39.32	—	\$39.32	\$39.32	33,930,400	-2.71%
3/7/2012	\$39.95	—	\$39.95	\$39.96	22,880,900	1.59%
3/8/2012	\$40.44	—	\$40.42	\$40.43	22,060,700	1.22%
3/9/2012	\$41.03	—	\$41.05	\$41.06	33,499,800	1.45%
3/12/2012	\$40.54	—	\$40.54	\$40.55	30,763,700	-1.20%
3/13/2012	\$43.39	—	\$43.39	\$43.40	77,277,600	6.79%
3/14/2012	\$43.58	—	\$43.58	\$43.59	68,028,600	0.44%
3/15/2012	\$44.70	—	\$44.68	\$44.69	57,124,800	2.54%
3/16/2012	\$44.57	—	\$44.56	\$44.57	48,844,400	-0.29%
3/19/2012	\$45.00	—	\$44.98	\$44.99	41,515,200	0.96%
3/20/2012	\$45.38	—	\$45.37	\$45.38	34,798,100	0.84%
3/21/2012	\$45.12	—	\$45.12	\$45.13	27,273,600	-0.57%
3/22/2012	\$44.65	—	\$44.65	\$44.66	27,461,100	-1.05%
3/23/2012	\$45.16	—	\$45.18	\$45.19	30,644,000	1.14%
3/26/2012	\$46.17	—	\$46.14	\$46.15	33,530,600	2.21%
3/27/2012	\$45.89	—	\$45.90	\$45.91	33,035,600	-0.61%
3/28/2012	\$46.27	—	\$46.26	\$46.27	29,763,100	0.82%
3/29/2012	\$45.67	—	\$45.67	\$45.68	32,268,900	-1.31%
3/30/2012	\$45.98	—	\$45.94	\$45.95	25,946,000	0.68%
4/2/2012	\$46.13	—	\$46.13	\$46.14	27,675,900	0.33%
4/3/2012	\$45.42	\$0.30	\$45.42	\$45.43	31,036,300	-0.89%
4/4/2012	\$44.41	—	\$44.41	\$44.42	41,347,700	-2.25%
4/5/2012	\$44.34	—	\$44.33	\$44.34	28,834,500	-0.16%
4/9/2012	\$43.89	—	\$43.89	\$43.90	29,376,400	-1.02%
4/10/2012	\$42.96	—	\$42.96	\$42.97	38,845,900	-2.14%
4/11/2012	\$44.01	—	\$43.98	\$43.99	32,142,200	2.41%
4/12/2012	\$44.84	—	\$44.82	\$44.83	33,631,100	1.87%
4/13/2012	\$43.21	—	\$43.20	\$43.21	58,183,900	-3.70%
4/16/2012	\$43.33	—	\$43.33	\$43.34	40,388,900	0.28%
4/17/2012	\$43.90	—	\$43.88	\$43.89	26,887,900	1.31%
4/18/2012	\$43.29	—	\$43.31	\$43.32	20,244,100	-1.40%
4/19/2012	\$43.22	—	\$43.19	\$43.20	25,963,300	-0.16%
4/20/2012	\$42.72	—	\$42.74	\$42.75	26,184,300	-1.16%
4/23/2012	\$42.85	—	\$42.84	\$42.85	25,538,100	0.30%
4/24/2012	\$43.28	—	\$43.28	\$43.29	21,420,300	1.00%
4/25/2012	\$43.16	—	\$43.17	\$43.18	31,694,000	-0.28%

Exhibit-4**JPMorgan Chase & Co. (JPM) Stock Prices, Dividends, Volume, and Returns**

20 May 2011 through 21 May 2012

Date	JPM Closing Price	JPM Dividends	JPM Bid	JPM Ask	JPM Trading Volume	JPM Logarithmic Return
4/26/2012	\$43.80	—	\$43.80	\$43.81	28,101,600	1.47%
4/27/2012	\$43.34	—	\$43.35	\$43.36	24,481,400	-1.06%
4/30/2012	\$42.98	—	\$42.95	\$42.96	23,521,700	-0.83%
5/1/2012	\$43.79	—	\$43.80	\$43.81	26,364,500	1.87%
5/2/2012	\$43.20	—	\$43.21	\$43.22	22,462,800	-1.36%
5/3/2012	\$43.01	—	\$43.00	\$43.01	19,536,800	-0.44%
5/4/2012	\$41.75	—	\$41.72	\$41.73	31,289,400	-2.97%
5/7/2012	\$41.78	—	\$41.78	\$41.79	25,910,000	0.07%
5/8/2012	\$41.38	—	\$41.37	\$41.38	28,051,600	-0.96%
5/9/2012	\$40.64	—	\$40.65	\$40.66	38,775,600	-1.80%
5/10/2012	\$40.74	—	\$40.72	\$40.73	35,827,300	0.25%
5/11/2012	\$36.96	—	\$36.95	\$36.96	217,294,200	-9.74%
5/14/2012	\$35.79	—	\$35.79	\$35.80	96,488,400	-3.22%
5/15/2012	\$36.24	—	\$36.24	\$36.25	89,903,600	1.25%
5/16/2012	\$35.46	—	\$35.46	\$35.47	68,729,800	-2.18%
5/17/2012	\$33.93	—	\$33.93	\$33.94	95,429,200	-4.41%
5/18/2012	\$33.49	—	\$33.49	\$33.50	82,655,400	-1.31%
5/21/2012	\$32.51	—	\$32.52	\$32.53	99,557,400	-2.97%

Source: CRSP.

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
5/20/2011	-0.69%	-1.64%
5/23/2011	-1.31%	-1.18%
5/24/2011	-0.06%	0.24%
5/25/2011	0.51%	-0.34%
5/26/2011	0.53%	0.28%
5/27/2011	0.51%	1.74%
5/31/2011	1.03%	0.74%
6/1/2011	-2.37%	-4.18%
6/2/2011	-0.07%	0.34%
6/3/2011	-0.96%	-0.46%
6/6/2011	-1.27%	-2.87%
6/7/2011	0.01%	-1.27%
6/8/2011	-0.60%	-1.51%
6/9/2011	0.75%	2.07%
6/10/2011	-1.42%	0.59%
6/13/2011	-0.08%	2.11%
6/14/2011	1.39%	-0.64%
6/15/2011	-1.76%	-2.12%
6/16/2011	0.00%	0.65%
6/17/2011	0.21%	1.40%
6/20/2011	0.55%	-0.86%
6/21/2011	1.59%	1.92%
6/22/2011	-0.55%	-0.17%
6/23/2011	-0.25%	-0.96%
6/24/2011	-1.08%	-0.43%
6/27/2011	0.82%	1.39%
6/28/2011	1.38%	-0.07%
6/29/2011	0.87%	2.79%
6/30/2011	0.98%	-0.15%
7/1/2011	1.37%	2.16%
7/5/2011	-0.01%	-0.94%
7/6/2011	0.12%	-1.14%
7/7/2011	1.07%	1.54%
7/8/2011	-0.64%	-1.46%
7/11/2011	-1.97%	-3.14%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
7/12/2011	-0.39%	-1.11%
7/13/2011	0.48%	0.22%
7/14/2011	-0.82%	-0.94%
7/15/2011	0.62%	-0.48%
7/18/2011	-0.97%	-1.54%
7/19/2011	1.64%	1.55%
7/20/2011	-0.01%	1.87%
7/21/2011	1.24%	3.40%
7/22/2011	0.14%	-0.62%
7/25/2011	-0.64%	-0.73%
7/26/2011	-0.48%	-0.02%
7/27/2011	-2.22%	-2.58%
7/28/2011	-0.30%	-0.04%
7/29/2011	-0.59%	-0.67%
8/1/2011	-0.36%	0.19%
8/2/2011	-2.65%	-3.18%
8/3/2011	0.51%	0.52%
8/4/2011	-5.22%	-6.10%
8/5/2011	-0.49%	-2.71%
8/8/2011	-7.24%	-13.42%
8/9/2011	5.08%	9.35%
8/10/2011	-4.02%	-9.67%
8/11/2011	4.52%	6.50%
8/12/2011	0.48%	-1.45%
8/15/2011	2.29%	4.31%
8/16/2011	-1.12%	-3.13%
8/17/2011	0.07%	0.76%
8/18/2011	-4.74%	-5.04%
8/19/2011	-1.60%	-1.61%
8/22/2011	-0.02%	-3.27%
8/23/2011	3.42%	2.60%
8/24/2011	1.22%	4.23%
8/25/2011	-1.64%	3.01%
8/26/2011	1.64%	0.31%
8/29/2011	2.99%	4.13%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
8/30/2011	0.37%	-0.99%
8/31/2011	0.50%	1.59%
9/1/2011	-1.25%	-3.00%
9/2/2011	-2.56%	-5.12%
9/6/2011	-0.82%	-2.17%
9/7/2011	2.95%	4.75%
9/8/2011	-1.12%	-2.77%
9/9/2011	-2.73%	-3.72%
9/12/2011	0.45%	1.10%
9/13/2011	1.10%	0.77%
9/14/2011	1.31%	1.11%
9/15/2011	1.57%	3.10%
9/16/2011	0.36%	-0.16%
9/19/2011	-1.08%	-3.51%
9/20/2011	-0.43%	-0.44%
9/21/2011	-3.02%	-5.05%
9/22/2011	-3.51%	-4.10%
9/23/2011	0.62%	2.56%
9/26/2011	2.19%	4.70%
9/27/2011	1.27%	0.19%
9/28/2011	-2.41%	-3.20%
9/29/2011	0.82%	2.85%
9/30/2011	-2.51%	-4.64%
10/3/2011	-3.33%	-6.38%
10/4/2011	2.41%	4.44%
10/5/2011	1.98%	0.91%
10/6/2011	2.05%	4.54%
10/7/2011	-1.12%	-4.53%
10/10/2011	3.41%	5.98%
10/11/2011	0.11%	1.27%
10/12/2011	1.18%	3.41%
10/13/2011	-0.30%	-3.85%
10/14/2011	1.79%	1.20%
10/17/2011	-2.13%	-3.86%
10/18/2011	2.10%	6.40%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
10/19/2011	-1.44%	-2.07%
10/20/2011	0.42%	1.37%
10/21/2011	1.92%	1.75%
10/24/2011	1.66%	2.38%
10/25/2011	-2.06%	-3.05%
10/26/2011	1.15%	1.74%
10/27/2011	3.58%	7.57%
10/28/2011	0.03%	0.19%
10/31/2011	-2.51%	-5.88%
11/1/2011	-2.96%	-5.78%
11/2/2011	1.71%	2.95%
11/3/2011	1.93%	2.28%
11/4/2011	-0.57%	-2.30%
11/7/2011	0.48%	0.24%
11/8/2011	1.14%	2.64%
11/9/2011	-3.90%	-6.81%
11/10/2011	0.76%	-0.37%
11/11/2011	1.98%	2.48%
11/14/2011	-0.94%	-2.48%
11/15/2011	0.46%	0.38%
11/16/2011	-1.53%	-3.48%
11/17/2011	-1.74%	-2.33%
11/18/2011	-0.04%	0.22%
11/21/2011	-1.89%	-3.04%
11/22/2011	-0.41%	-1.40%
11/23/2011	-2.38%	-3.14%
11/25/2011	-0.36%	0.82%
11/28/2011	3.04%	3.10%
11/29/2011	0.23%	-1.01%
11/30/2011	4.35%	7.43%
12/1/2011	-0.23%	-0.80%
12/2/2011	0.01%	2.63%
12/5/2011	1.05%	3.31%
12/6/2011	0.05%	-0.09%
12/7/2011	0.19%	1.77%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
12/8/2011	-2.33%	-4.89%
12/9/2011	1.78%	2.63%
12/12/2011	-1.56%	-3.67%
12/13/2011	-1.14%	-1.82%
12/14/2011	-1.28%	-1.13%
12/15/2011	0.38%	-0.75%
12/16/2011	0.50%	0.32%
12/19/2011	-1.29%	-3.36%
12/20/2011	2.99%	4.24%
12/21/2011	0.21%	0.83%
12/22/2011	0.91%	2.97%
12/23/2011	0.80%	0.82%
12/27/2011	0.01%	-1.44%
12/28/2011	-1.38%	-2.29%
12/29/2011	1.09%	2.17%
12/30/2011	-0.27%	-0.55%
1/3/2012	1.60%	4.47%
1/4/2012	-0.04%	-0.05%
1/5/2012	0.31%	2.26%
1/6/2012	-0.28%	-0.82%
1/9/2012	0.28%	1.31%
1/10/2012	1.04%	2.34%
1/11/2012	0.10%	1.92%
1/12/2012	0.31%	0.39%
1/13/2012	-0.54%	-1.40%
1/17/2012	0.38%	-1.88%
1/18/2012	1.23%	3.02%
1/19/2012	0.57%	1.29%
1/20/2012	0.08%	0.81%
1/23/2012	0.15%	0.67%
1/24/2012	-0.08%	-0.32%
1/25/2012	0.98%	-0.05%
1/26/2012	-0.51%	-1.14%
1/27/2012	0.06%	1.38%
1/30/2012	-0.36%	-1.83%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
1/31/2012	-0.02%	1.02%
2/1/2012	1.12%	2.57%
2/2/2012	0.18%	0.63%
2/3/2012	1.50%	3.53%
2/6/2012	-0.09%	-0.36%
2/7/2012	0.13%	-0.49%
2/8/2012	0.22%	1.63%
2/9/2012	0.11%	-0.19%
2/10/2012	-0.84%	-1.55%
2/13/2012	0.74%	0.79%
2/14/2012	-0.15%	-1.64%
2/15/2012	-0.44%	-1.03%
2/16/2012	1.26%	2.04%
2/17/2012	0.14%	0.84%
2/21/2012	0.01%	0.42%
2/22/2012	-0.33%	-1.76%
2/23/2012	0.58%	0.63%
2/24/2012	0.15%	-1.04%
2/27/2012	0.10%	1.92%
2/28/2012	0.28%	0.85%
2/29/2012	-0.55%	-0.93%
3/1/2012	0.68%	2.03%
3/2/2012	-0.50%	-0.63%
3/5/2012	-0.45%	-1.26%
3/6/2012	-1.75%	-3.58%
3/7/2012	0.80%	2.29%
3/8/2012	1.08%	1.92%
3/9/2012	0.46%	0.51%
3/12/2012	-0.13%	-0.42%
3/13/2012	1.78%	5.40%
3/14/2012	-0.37%	-0.03%
3/15/2012	0.66%	2.74%
3/16/2012	0.13%	1.10%
3/19/2012	0.41%	0.53%
3/20/2012	-0.44%	1.27%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index Logarithmic Return	Logarithmic Return
3/21/2012	-0.11%	-0.50%
3/22/2012	-0.82%	-1.65%
3/23/2012	0.44%	1.15%
3/26/2012	1.40%	1.86%
3/27/2012	-0.37%	-1.72%
3/28/2012	-0.55%	0.88%
3/29/2012	-0.19%	-1.85%
3/30/2012	0.33%	0.30%
4/2/2012	0.81%	0.86%
4/3/2012	-0.43%	-0.88%
4/4/2012	-1.19%	-2.56%
4/5/2012	-0.09%	-0.35%
4/9/2012	-1.17%	-1.80%
4/10/2012	-1.85%	-2.62%
4/11/2012	0.86%	2.14%
4/12/2012	1.51%	2.49%
4/13/2012	-1.26%	-3.83%
4/16/2012	-0.06%	1.32%
4/17/2012	1.51%	1.51%
4/18/2012	-0.40%	-0.35%
4/19/2012	-0.48%	-0.99%
4/20/2012	0.16%	-1.85%
4/23/2012	-0.96%	-1.34%
4/24/2012	0.33%	1.00%
4/25/2012	1.40%	0.71%
4/26/2012	0.69%	0.88%
4/27/2012	0.40%	-0.31%
4/30/2012	-0.44%	-0.70%
5/1/2012	0.49%	1.66%
5/2/2012	-0.20%	-1.44%
5/3/2012	-1.01%	-1.16%
5/4/2012	-1.61%	-1.93%
5/7/2012	0.05%	1.15%
5/8/2012	-0.53%	-1.16%
5/9/2012	-0.60%	-1.63%

Exhibit-5**Market and Peer Index Returns**

20 May 2011 through 21 May 2012

Date	CRSP Market Total	Peer Index
	Return Index	Logarithmic Return
	Logarithmic Return	
5/10/2012	0.29%	0.58%
5/11/2012	-0.27%	-1.59%
5/14/2012	-1.23%	-2.95%
5/15/2012	-0.60%	-0.69%
5/16/2012	-0.49%	-1.84%
5/17/2012	-1.64%	-1.82%
5/18/2012	-0.84%	-1.03%
5/21/2012	1.78%	0.52%

Source: CRSP.

Exhibit-6**JPMorgan Regression Results**

23 May 2011 through 21 May 2012

Regression Statistics			
R Squared	0.903		
Adjusted R Squared	0.899		
Standard Error	0.86%		
Observations	252		

	Coefficients	Standard Error	t- statistic
Intercept	0.03%	0.06%	0.50
Market Index	0.144	0.081	1.77
Peer Index	0.827	0.045	18.21
14 July 2011	2.70%	0.86%	3.12
13 October 2011	-1.74%	0.88%	-1.99
13 January 2012	-1.35%	0.86%	-1.56
13 April 2012	-0.38%	0.87%	-0.43
11 May 2012	-8.41%	0.87%	-9.72
17 May 2012	-2.69%	0.87%	-3.11
21 May 2012	-3.68%	0.87%	-4.22

Exhibit-7
JPMorgan Event Study Results

Event Dates										
Date	JPM Closing Price	JPM Prior Day Closing Price	JPM Logarithmic Return	Market Index Logarithmic Return	Peer Index Logarithmic Return	JPM Explained Return	JPM Residual Return	<i>t</i>-statistic		
11 May 2012	\$36.96	\$40.74	-9.74%	-0.27%	-1.59%	-1.32%	-8.41%	-9.76		
17 May 2012	\$33.93	\$35.46	-4.41%	-1.64%	-1.82%	-1.72%	-2.69%	-3.12		
21 May 2012	\$32.51	\$33.49	-2.97%	1.78%	0.52%	0.71%	-3.68%	-4.27		